

Fisheries Value Chains in Northern Mozambique:

A comparative analysis across
fisheries and sites

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Introduction

This working paper synthesizes results from value chain mapping of three types of small-scale fisheries (octopus, small pelagics and mixed reef fish) across four sites in Northern Mozambique (Lalane, Maringhana, Mieze, and Vamisi). Data was collected within the SPACES project, by the SPACES field team in Mozambique from February-April 2015. It draws on information from the site reports from the four sites and outlines the maps of the fisheries value chains in each site. Each value chain is characterized with respect to number and types of actors involved and a comparative analysis is conducted of value chain characteristics and complexity across fisheries and sites.

Methodological note

An explanation of the proxies for complexity used in the comparison of value chains in Mozambique.

In order to compare the complexity of the different value chains in Mozambique, two proxies were created. The first sums the number of pathways the products (in this case mixed reef fish, small pelagic fish or octopus) could travel along before arriving at the end point or final consumer (indicated in green in the maps). The second looks at the number of nodes the products pass through before arriving at the end point.

To calculate the first proxy the number of pathways per end point were counted. Note that fishers were seen as a starting point and thus each fisher node was not counted as a separate path for the products. Due to the fact that in Mieze and Vamizi the landing sites are included in the maps and in Lalane and Maringanha they are not, a value including and excluding landing sites was taken. This was done because including landing sites could bias the data towards Mieze and Vamizi, however the presence of multiple landing sites also provides added complexity in these value chains.

To calculate the second proxy the number of nodes was simply counted for each end point, across all pathways. The end point itself is excluded in the count but the starting node (i.e. fishers) is included. Note that the fishers were counted as one node and not counted separately according to their gear

or transport combinations. For each point the number of nodes was noted and the median taken to provide an overall complexity value.

To illustrate:

In Lalane Mixed Reef Value Chain there are three end points (local consumers, consumer Moçimboa and Hotels Mocimboa), see figure below.

Starting at local consumers one can see there are two pathways available, one in which the fish comes directly from the fishers and one where it passes through the mama karangas first. Thus fish traveling from the fishers to the end point 'local consumers' has two possible pathways. 'Consumer Mocimboa' and 'Hotels Mocimboa' have only one pathway each, traveling through Moçimboa de Praia and young male local traders. Thus we have values of 1, 2, 1, 1; the median of which is 1.






To calculate the second proxy for Lalane one can see for 'local consumers' there is either one node or two nodes before the end point and for 'consumers Moçimboa' and 'hotels Moçimboa' there are three nodes (Moçimboa de Praia, young male local traders and the fishers). Thus we have values of 1, 2, 3, 3; the median of which is 3.

Key:

Symbols:

	Fishers
	Traders
	Places
	Consumers

Colours:

	Male
	Female
	Gender neutral
	End point
	Market

Lalane

Lalane is a small fishing village in the North of Mozambique. The residents of the area take part in a number of fishing activities. In addition to fishing for small pelagic fish, octopus and mixed reef fish (the focus of this study) the locals also utilize the extensive intertidal zone to glean for crustaceans and mollusks and use mosquito nets to catch smaller fish. Migrant fishers are also common in Lalane.

The prominent languages in the village are Makonde and Kimwani.

Key informant interviews and surveys with fishers and traders were carried out between 15-21 March 2015 in Lalane, Cabo Delgado, Palma, Mozambique.

Interview Participants

The respondents were either fishers or traders. The fishers employ different types of gear and modes of transport that are used in multiple combinations. The following groupings were noted: fishermen

who use boat and net, boat and spear gun, boat and hook + line and fishermen who use trap as well as fisherwoman who use mosquito nets.

Most of the fishermen use boats as their fishing areas surround Vumba and Kifuki islands, which can only be reached by boat. 2 kinds of boat are used: Ntumbwi (canoe) and Ngalawa (sailing boat). Many fishers use hook & line to fish. A group of 6 fishers only use spear guns, 3 older fishermen use a trap and a few use nets. It was very difficult to find fishermen who use nets and traps as very few in the village use these gears. Furthermore many of them are also involved in farming activities and thus were largely unavailable.

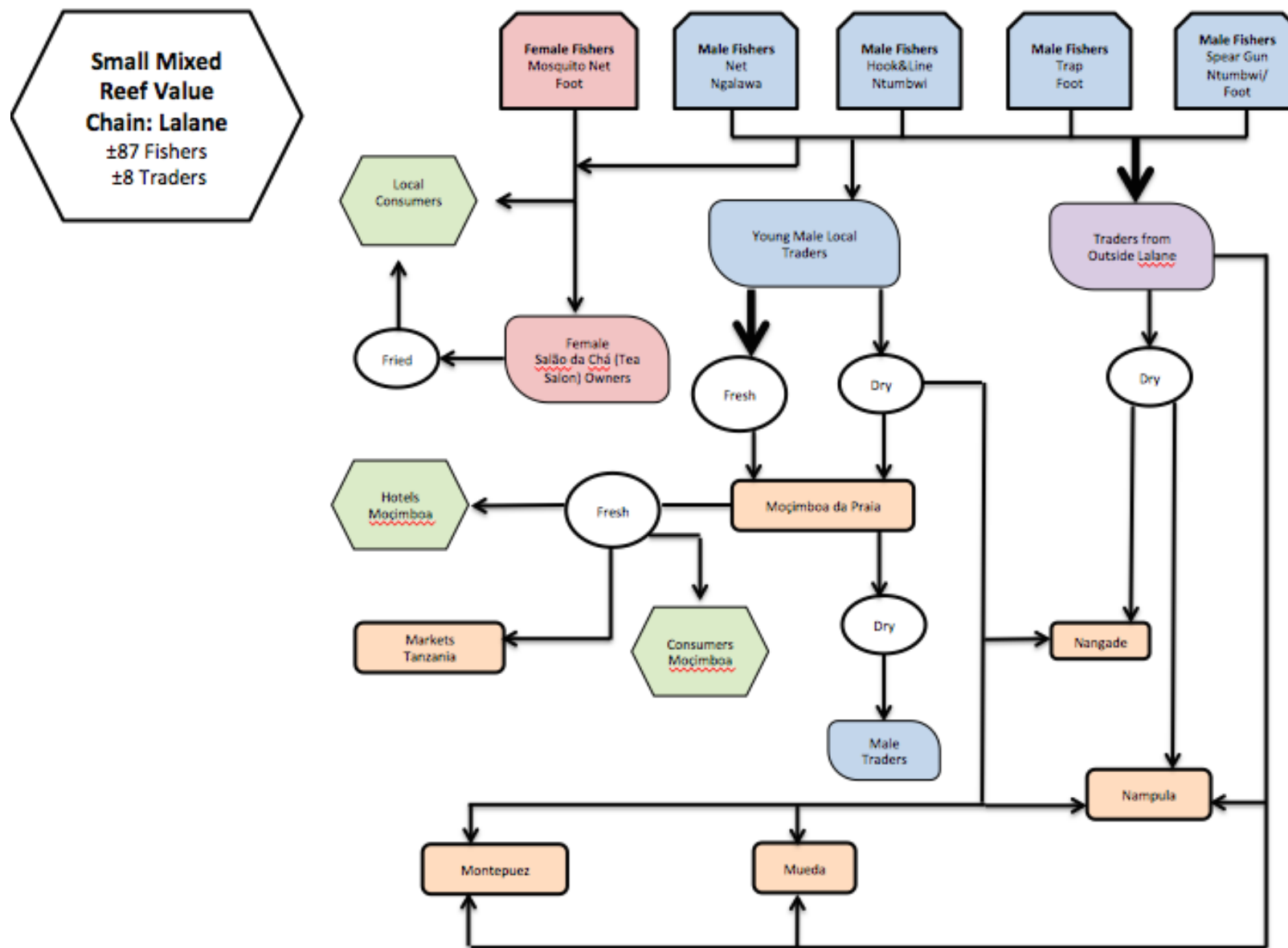
Many woman in Lalane are fishers but only 4 groups of 3 woman were seen going to fish and/or returning from the sea with their mosquito nets during the fieldwork. Older ladies, young ladies and also some girls constituted these groups. It was said that the others ladies did not go to fish because of the season (rainy season), as it is best to work in the rice farms at this time.

All of people in the village are fish consumers. They buy the fish that is caught in the area at the landing site (Praia de Lalane) where it is cheaper.

Value Chains

P.T.O

Value Chain 1: Mixed Reef Fish



*See appendix 2.1A for original value chain drawn in the field

Fishers

- 6 fishermen who use hook & line were interviewed. They all have boats (ntumbwi). Ages: 22, 38, 50, 50, 51 and 60.
- 2 fishermen who use nets were interviewed. They all have boats (ngalawa). Ages: 51 and 64.
- 5 fishermen who use spear gun were interviewed. Ages: 20, 32, 36, 36 and 41. Only 3 of them use it to catch only mixed reef fish, the other 2 also use it to catch mixed reef and octopus.
- 1 male fisherman who uses trap to catch mixed reef fish was interviewed, he did not know his age and he said that sometimes he goes in a boat (ntumbwi) with other fishermen to fish.
- 2 female fishers were interviewed, they all use mosquito nets and they only catch mixed reef species occasionally.

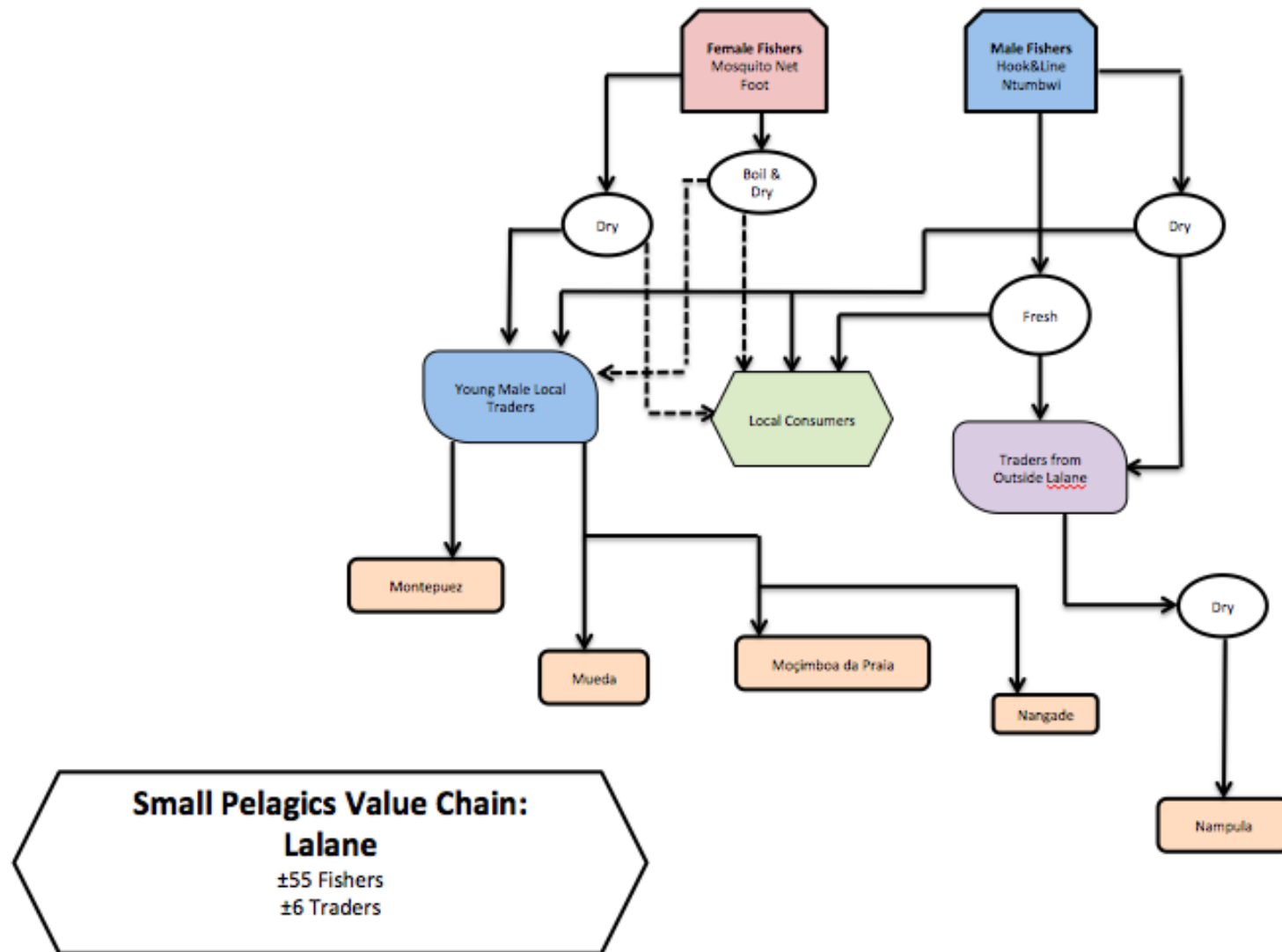
Traders

- In Lalane, there are very few local traders as this is a new activity in the village. The traditional leader said that a long time ago the fishermen took the fish to sell in other places, even in Tanzania, and some outside traders came to buy the fish in the village; now a small group of local traders constituted mostly by young men are buying the fish and selling it in other places and to other traders. They sell fresh fish to hotels and consumers and dried fish to traders in the same places.
- Occasionally, some traders from Lalane take the dried fish and octopus to sell to other traders in Mocimboa da Praia.
- Only 6 traders were interviewed, 2 of them dry the fish in inland districts and the remaining 4 sell the fish fresh to the nearest districts such as Mocimboa da Praia.

Description of the value chain

- All of the fisher groups sell the fresh fish to the consumers in Lalane.
- All the fishers with exception of the female fishers sell the fish to local and outside traders. The local traders always sell the fresh fish in Mocimboa da Praia to the hotels and consumers and sometimes in Tanzania. Depending on the quantity, they also sell the dried fish in Nangade and Nampula. They may also sell fresh and/or dried fish in the other districts such as Montepuez and Mueda.
- The outside traders sell the dried fish to the following inland districts: Montepuez, Mueda, Nangade and Nampula province.

Value Chain 2: Small Pelagic fish



*See Appendix 2.1B for the original value chain drawn in the field

Fishers

In this VC map, only 2 groups of fishers were found:

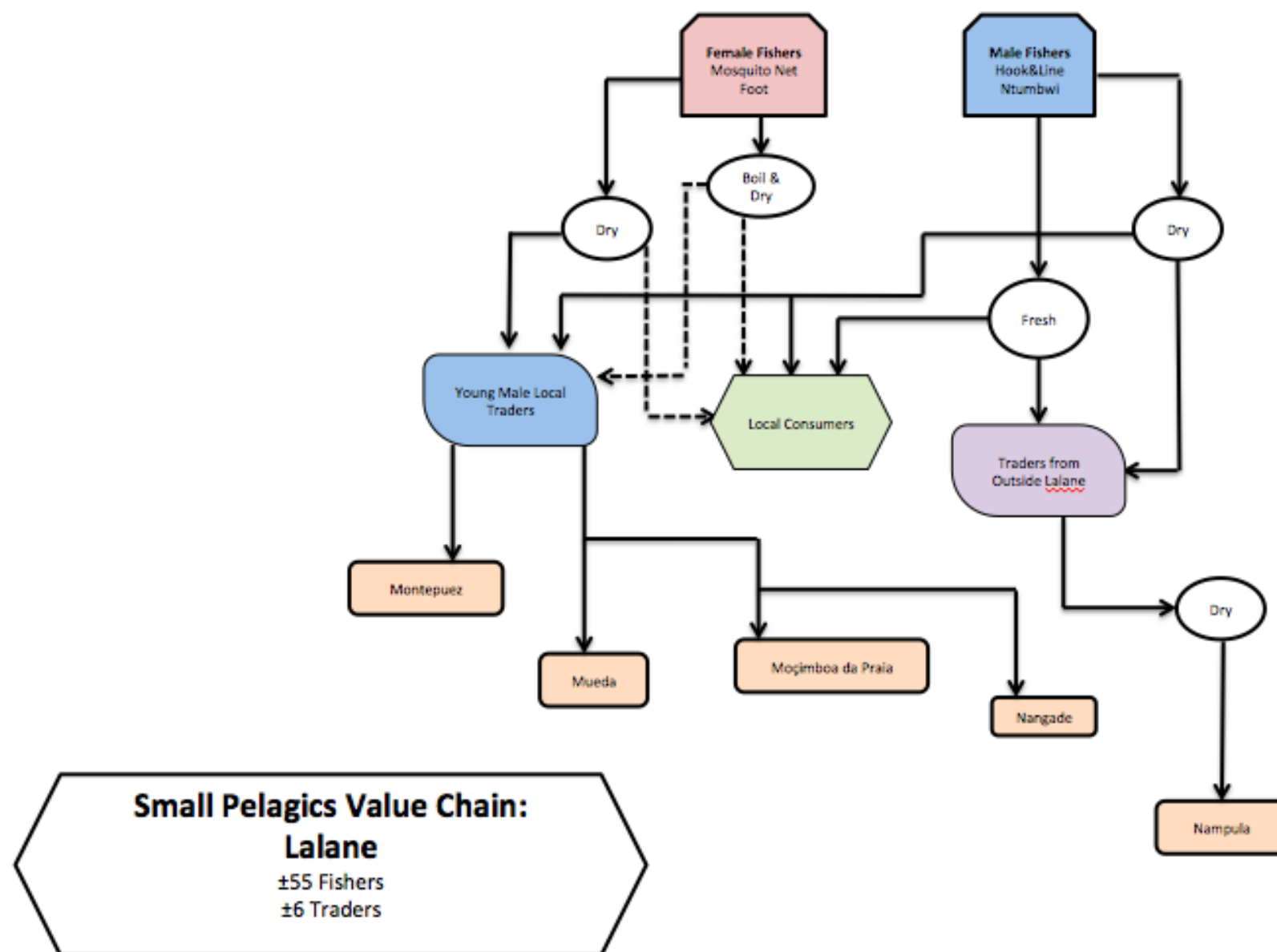
- Female foot fishers who use a mosquito net specifically to catch small pelagics. 5 women constitute this group, 2 of which also catch mixed reef occasionally. They are all residents in Lalane. Some of the ladies did not know their ages and the others are 27, 29, 30 and 58 years old. They all dry or boil the fish to preserve them to sell later. They mostly catch a mixture of small pelagics that they call locally “sololo”.
- 1 Male boat fisher who uses hook & line to catch small pelagics and also mixed reef was interviewed. This fisherman is 22 years old and he salts and dries to sell.

Description of the Chain

The female foot fishers dry the fish first and only sell it dried to the local consumers and local traders. The male boat fisher who uses the hook & line sells the fresh fish to local consumers and the dried and/or fresh fish to local traders and traders from outside Lalane. In turn the local traders sell the fish in the inland districts, such as: Montepuez, Mueda, Mocimboa and Nangade.

The outside traders only take the fish to sell it dried in Nampula.

Value Chain 3: Octopus



*See Appendix 2.1C for the original value chain drawn in the field.

Fishers and traders

In this VC only 2 groups of fishers were found, the male boat fishers who use a spear gun to catch octopus and also use hook & line.

- 4 fishermen were interviewed, 2 of them use a spear gun as their main fishing equipment to catch both octopus and mixed reef fish. The other 2 said that they catch octopus but their main fishing equipment is a hook and line. Their ages are 45 and 36. They catch more octopus in Kusi than in Kaskazi and the price of octopus per kg also changes; they charge more in Kusi than in Kaskazi.
- The ones who use hook & line are 60 and 21 years old and only the fishermen with 60 years old decreases the price of octopus in Kusi, from 30 to 25 meticaïs per kg.
- The prices of octopus change from 30 meticaïs per kg to 35 meticaïs per kg in Kusi.
- The fresh octopus is sold (by both groups) on the beach to local consumers and local traders. The octopus is also taken home to be dried and sold to the local traders at a later stage.
- The local traders take the dried octopus to sell to other traders in Balama (boundary with Niassa province) and Montepuez districts; in turn they sell the dried octopus to local consumers in these inland districts.

Key Informant Notes and Observations

- The traditional leader said that a long time ago, the Kusi season was a very difficult time to get fish because the fishermen did not go to the sea due to bad weather conditions. However, nowadays, Kusi season is the period that is easier to buy fish because of the “Macuas fishermen” (fishermen from Nacala district in Nampula province). The Macuas fishermen need the strong winds of Kusi because of their big boats.
- During Kusi, these fishermen infest all of the islands that surround Lalane and Palma; and when Kaskasi season comes, they leave these areas.
- A long time ago there was not a local trader or middle man in Lalane, the fishermen were the ones that took the fish in their boats to sell it in other places, mostly in Tanzania. Sometimes an Indian trader came to buy fish in Lalane and sell it in other places (no information about these places).
- The decision, by traders, to sell the fish dried or fresh depends on the availability of ice.
- If they have ice they keep the fish fresh and sell it quicker and if they do not have ice, they process the fish; salt it and dry it to sell it dried. The ice comes from Mocimboa da Praia by boat; it is a sailing boat and it belongs to the traditional leader of Lalane.
- A trader said that the decision to sell the fish in nearby or further districts depends on the quantity of fish, if it is a small portion it is sold in Mocimboa da Praia but, if it is a big portion he goes to sell it in Mueda district and Nampula province. It is said that they sell the fish to the consumers in this inland districts.

- One of spear gun fishermen said that he does not go often to catch octopus but to catch mixed reef and lobster sometimes. But when a trader asks for octopus, he will go only to catch octopus and return with 60kgs.
- It is said that Kusi is a good season to catch octopus, however is also a dangerous season to go to the sea.

A comparison of the value chains across the fisheries (mixed reef, small pelagic and octopus) in Lalane.

General Characteristics of the value chains and fisheries

- In general female fishers are in the minority across all fisheries, with no reported female fishers in the octopus fishery.
- The number and type of gear and transport differs across fisheries.
- Mixed Reef fishers employ the greatest variety of gear. Mosquito net, net, trap, hook & line and speargun are all used. While small pelagics and octopus fishers use only two types of gear. Small pelagic fishers use hook & line and mosquito nets. Octopus fishers also employ hook & line as well as speargun.
- There are both foot and boat fishers across the fisheries. Mixed reef fishers are both foot fishers and use ntumbwis and ngalawas as well. The small pelagic fishery uses both boat and foot and the octopus fishery uses only boats in Lalane.
- The mixed reef fishery has the greatest number of trader nodes at 3. While the other two fisheries have only 2 trader nodes.
- The mixed reef fishery is the only fishery that has a distinct female trader node (mama female tea salon owners). The other two fisheries have only male and non gender-specified trader nodes. There are male only trader nodes in each fishery.
- In terms of markets, there appears to be a greater number of markets available for mixed reef fish (7). Small pelagic fish gets sent to 5 markets and octopus is only sold in 2 markets.
- In Lalane there is only one consumer node (local consumers) for small pelagic fish. Whereas there are both non-local and local consumers as well as hotels and restaurants that consume mixed reef fish and octopus
- All of the fisheries sell their products fresh and dried. The small pelagics are also boiled and the mixed reef fish are sold fried too.

Value Chain Complexity

- By looking at the proxies for complexity; the small pelagics fishery is the simplest and the octopus fishery the most complex.

- The median number of nodes across the fisheries is the following: Mixed reef (3), Small pelagics (1) and octopus (4)
- The median number of pathways is the following: Mixed reef (1), small pelagics (1) and octopus (1.5).
- The octopus fishery's value chain seems to be the most complex because before reaching inland consumers the product must pass through two trader nodes and a marketplace. Whereas in the small pelagics and mixed reef fisheries the fish pass through only one trader node or go straight to the consumers, simplifying the value chain.
- The mixed reef value chain appears, simply by looking at the map, to be the most complex. However this is because there are a greater number of markets that the fish is delivered to, making it appear complex. However, if the chain is examined the movement of fish from fishers to consumers is fairly straight forward, simply moving from traders to markets or tea salons to consumers with few 'stopovers' in between.
- The small pelagic fishery is the simplest of the three. This is because the local consumers acquire the fish directly from the fishers. The rest of the fish simply travels through one trader node before arriving at other markets.

Maringanha

Interviews with fishers and traders in Maringanaha, Cabo Delgado, Pemba were undertaken by the SPACES team from 16 – 27 February 2015.

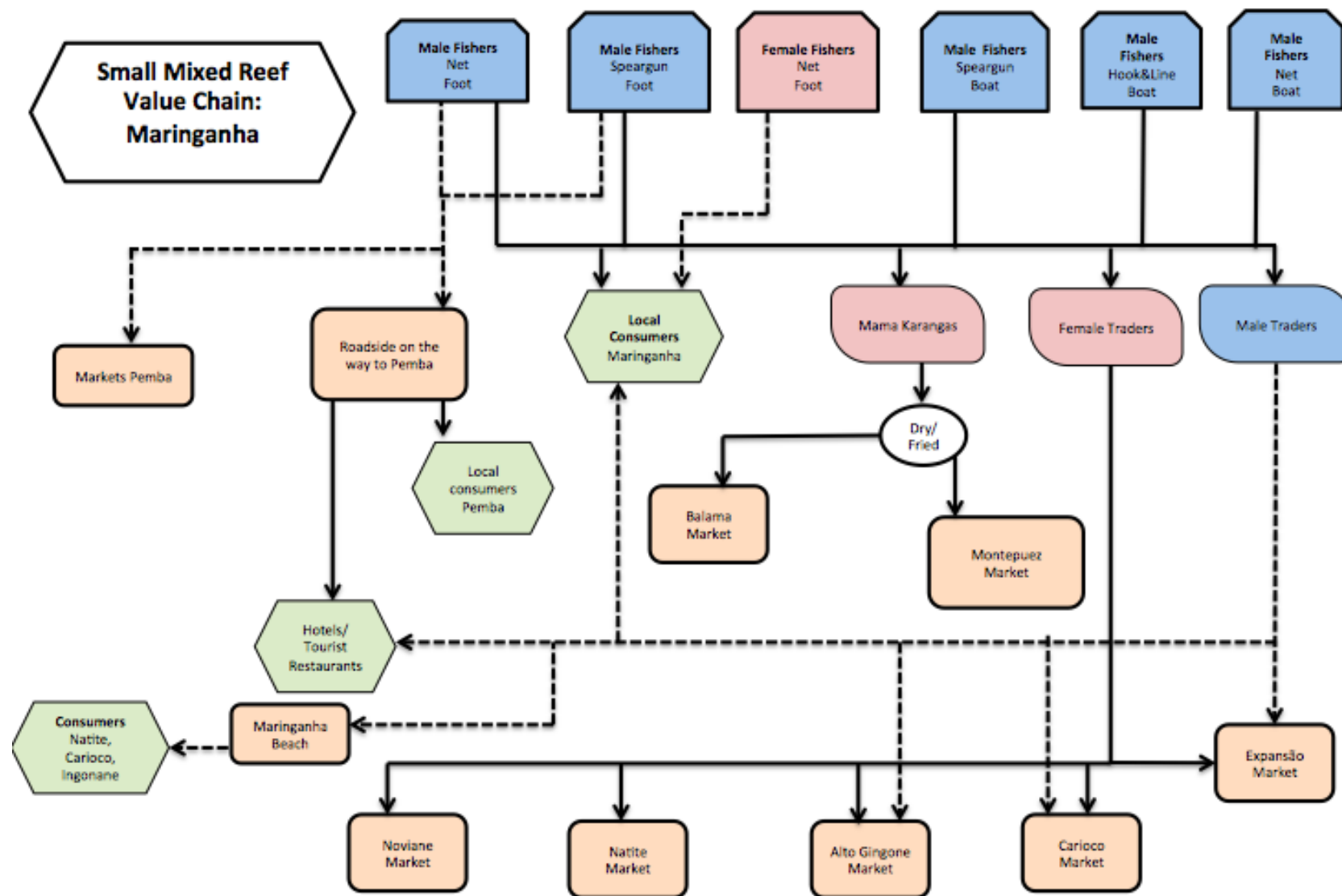
Information from key informants

- 14 Key informant interviews were conducted with fishermen. In this group only 3 women were interviewed.
- Among those interviewed some of them catch small pelagics, mixed reef fish and/or octopus in Maringanha. They use nets, spear gun and hook & line
- Some of them consider that the relationship among them and traders are good because sometimes they help the fishermen and vice-versa. Yet, others are not very satisfied because the traders are not confident people because they do not like to pay the combined price.
- Most of them consider the relationship with other fishermen and also traders very important in a decision making process.
- 2 key informant Interview were conducted with a male well-informed person and both noticed a decrease in fish in recent years.
- One of them said that the fish is not growing as before and he thinks that it is because the use of mosquito nets is increasing.
- Unfortunately we did not find a trader with which to do a key informant interview.

Value Chains

P.T.O

Value Chain 1: Mixed reef fish



*See Appendix 2.2A for the original drawing of the value chain done in the field

Fishers and traders

Male Foot Fishers

- Two were interviewed in their homes in Maringanha Village: ages 38-45. One from the village and another from Alto Gingone, a nearby neighbourhood.
- They use spear guns and nets to catch Parrotfish (*Scarus* spp.), Goatfish (*Parapneus* spp.) and *Acanthurus* spp.
- They sell their catch on the beach, the roadsides into Pemba, the village of Maringanha and in markets around Pemba.
- They also sell to Mama Karangas, to small-scale traders and local consumers from Maringanha.
- They sell to more traders and consumers in Kaskazi than in Kusi; they land more in Kaskazi due to weather conditions.
- Average prices Parrot fish= 8 MT for 1 small individual up to 80 MT for 1 large individual (Kaskazi). In Kusi 1 large individual increases in price to 100 MT.
- Average prices of *Acanthurus*= 50 MT
- The male foot fishers sell their fresh fish directly to candungueiros (male and female traders), mama karangas on the beach and to the hotels around Pemba on the roadside.
- In addition the mama karangas sell the fish in markets outside Pemba such as Balama and Montepuez.
- The candungueiros (male and female) in turn sell the fish in Pemba in the markets of Natite, Novianne and Cariaco.

Female Foot Fishers

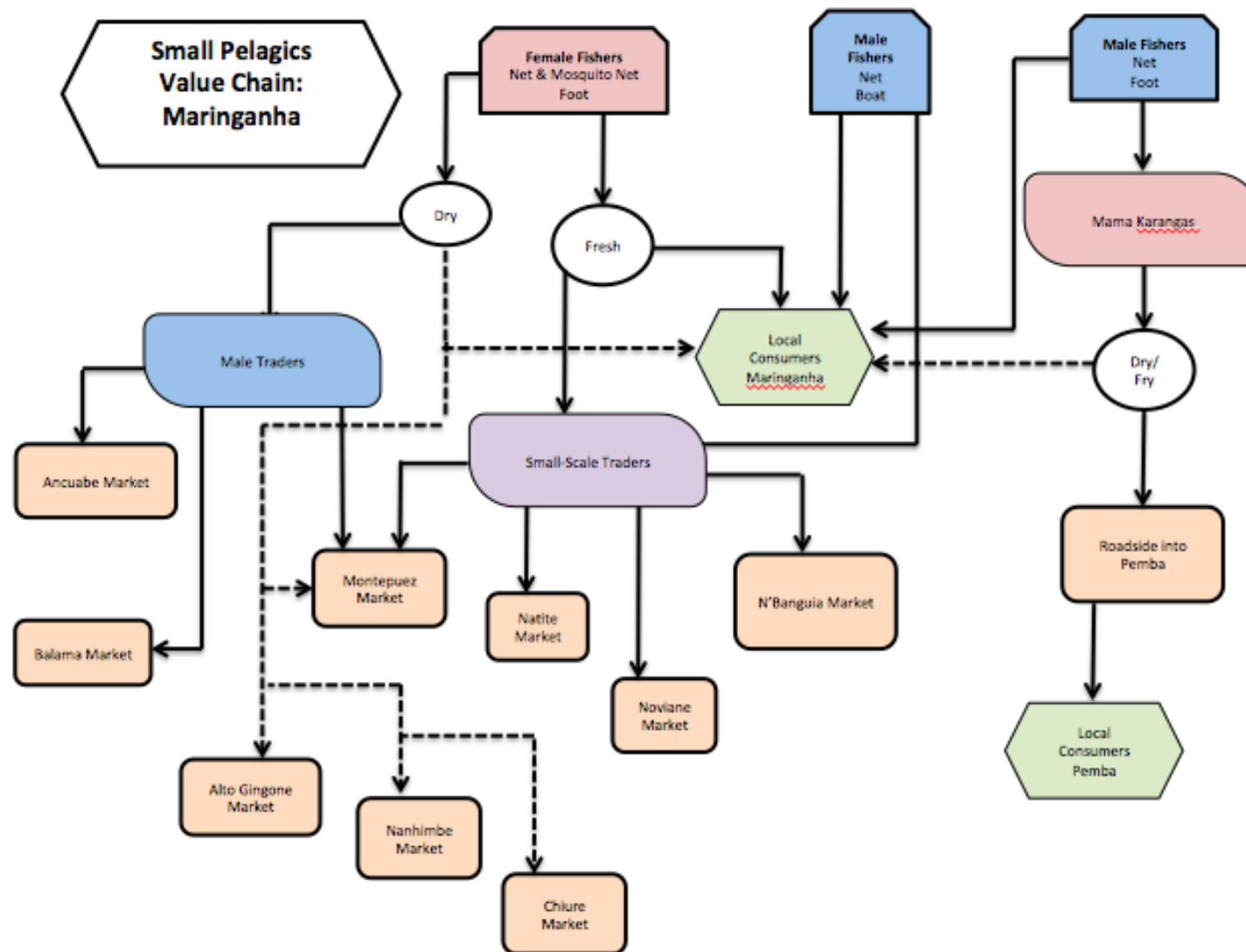
- Three were interviewed, two from Maringanha (age: 50) and another one from Chuiba (age: 30).
- They all use nets and to catch small pelagics but sometimes they also catch mixed reef fish such as *Decapterus* sp, parrot fish and small grouper.
- The ladies sell the fresh fish to consumers in Maringanha.

Male Boat Fishers

- Nine were interviewed, most of them from Maringanha and 1 from Chiuba neighbourhood. Ages: 35 to 70.
- One of them uses spear gun, the other two use a hook & line and the rest of them use nets.
- In general they catch parrot fish, chereu, grouper, safi, *Lutjanus* spp, *Decapterus* sp. njana, nkundaji.

- They sell their catch on the beach to local consumers and also to male and female candungueiros.
- The female candungueiros sell the fish in the markets around Pemba: Cariaco, Expansao, Alto-Gingone, Noviane and Natite.
- The male candungueiros sell the fish on the beach of Maringanha to consumers of Maringanha and also to consumers from Natite, Cariaco and Ingonane.
- The male candungueiros also take the fish to sell on the wimbe roadside to the hotels and also to the sell it in the markets of Expansao, Cariaco and alto-Gingone.

Value chain 2: Small pelagic fish



*See Appendix 2.2B for the original drawing of the value chain done in the field

Female Foot Fishers and traders

- 10 female foot fisher were interviewed in their homes in the village. Ages between 30 - >54
- They all use nets with small mesh sizes (1 inch) and mosquito nets and fish from the beach in groups of 2-5+.
- They catch anchovy, hemiramphus spp., sardines and decapтерus spp.
- They sell on the beach and from their homes both dried and fresh.
- The women use plastic basins and plates made from woven palm leaves to carry the fish on foot to home or markets. They sort the species into little piles which are arranged on the woven plate.
- Fresh fish is sold directly to local consumers, to traders (small-scale) and at Expansão market.
- These small-scale traders in turn sell the fish at N'Banguia market, Natite, Novianne in Pemba as well as Montepuez 200km away district.
- The women will dry at home and then sell to male traders and consumers from Maringanha. In addition dried fish is also sold in Alto Gingone and Nanhimbe by the women themselves and also outside Pemba in Montepuez and Chiure districts.
- The male traders (Candungueiros) will sell the dried products outside Pemba in Ancuabe, Balama and Montepuez markets.

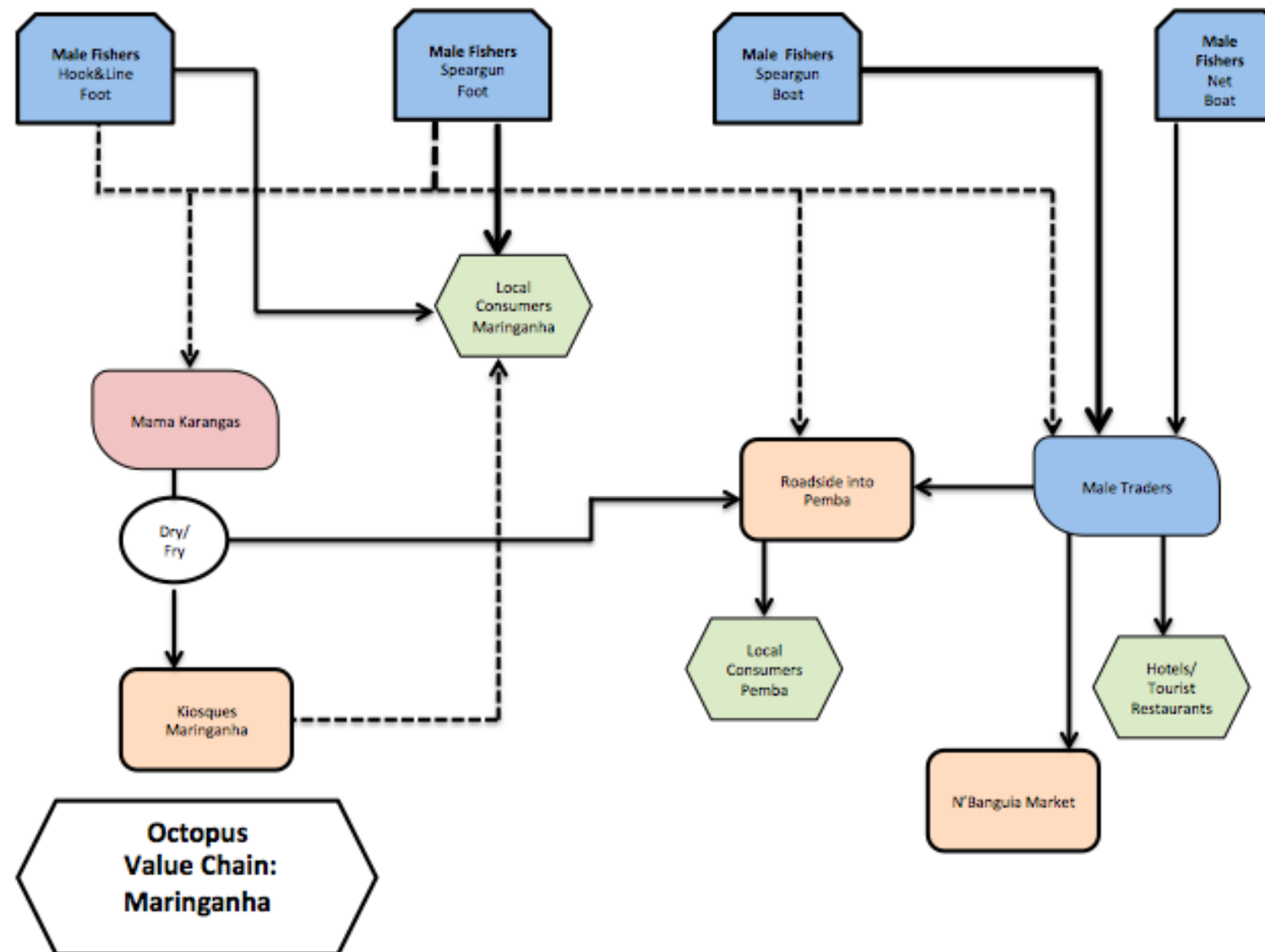
Male Boat fishers

- Only 1 man boat fisher for small pelagics was interviewed in the village
- He uses a net as his main gear.
- He sells his catch fresh on the beach to local consumers the fresh fish and also to traders who sells the fish in the Pemba markets (Nanhimbe and Noviane) and outside Pemba, in the district (Montepuez), but we do not have the information of the condition of the fish: is it dried, fresh conserved in the ice box?

Man Foot Fisher

- According to the VCA map, the man foot fisher sells the fish to local consumers and mama karangas that also sell to consumers on the roadside

Value chain 3: Octopus



*See Appendix 2.2C for the original drawing of the value chain done in the field.

Fishers and traders

Male Boat Fisher

- Five fishers from Maringanha were interviewed. Ages: they are 49, 54, 56, 64 and 70.
- Only one of them uses a spear gun and goes to the sea only to catch octopus, the others use nets and catch octopus occasionally.
- The male boat fishers sell the fresh octopus directly to the male traders along the beach and in turn the male traders sells the octopus to the hotels and restaurants. They also take the octopus to Nbanguia markets and the roadside to sell to consumers.

Male Foot fisher

- Five fishers from Maringanah were interviewed. Ages: 46-70.
- Four of the interviewees use a spear gun and one use a hook & line (only catching octopus occasionally).
- Only one of the four uses a spear gun only to catch octopus, the other three use their spear guns to catch octopus and mixed reef fish .
- The male foot fishers sell their fresh octopus directly to local consumers and male traders.
- They also try to sell the octopus on the roadside while they are on the way to the markets.
- They sell it fresh to local consumers, to small-scale traders and to mama karangas.
- The traders sell the octopus in the N'Banguia market, in hotels in Pemba and on the roadside.
- The mama karangas in turn sell the fried octopus on the roadside and in the kiosques of Maringanha at night.
- They also sell to candungueiros.
- Depending on the octopus size, it can be sold in a bunch of three for 100 MTS or one small octopus can be sold for 50 MTS and a large octopus can be sold for 180 meticaís.

Outstanding questions and answers

- How do the traders get to Maringanha and at what times do they buy on the beach?
 - In the afternoon the traders arrive to Maringanha to buy fish on the beach. They come by motorbike. Unfortunately only in the last day a trader was seen. He was leaving the landing site with two bunches of parrot fish.

- Where do the traders go to buy in Kusi when the weather is bad in Maringanha and fishers are landing less?
- The traders go to Paquitequete where the biggest landing site is.

A comparison of the Value Chains across the different fisheries (mixed reef, small pelagic and octopus) in Maringanha.

General Characteristics of the value chains and fisheries

- Male fishers are the majority in Maringanha with no female fishers reported in the octopus fishery.
- There are both male and female traders across the fisheries with more female than male traders in the mixed reef fishery (due to the mama karangas).
- As in Lalane, the number and type of gear and transport differs across fisheries.
- Mixed Reef and octopus fisheries both use three gear types. Both mixed reef and octopus fishers employ net, spear gun and hook & line. The small pelagics fishers use only nets and mosquito nets.
- There are both foot and boat fishers across all the fisheries.
- There are 11 markets available for mixed reef fish, 10 for small pelagics and just 4 for octopus.
- The three fisheries in Maringanha differ in the way that the fish is processed. The mixed reef fish are sold fresh or fried, the small pelagics are sold fresh, dried or fried and the octopus is only sold fried or dried.

Value Chain Complexity

- In general, Maringanha's value chain is fairly simple with most consumers acquiring their fish (no matter the fishery) straight from the fisherman, at the roadside on the way to Pemba or from local traders. As such there are not very many nodes that the products pass through before reaching the final consumer.
- According to the calculations, the median number of nodes across the fisheries is the following: Mixed reef (2), small pelagics (1) and octopus (2.5).
- The median number of pathways is the following: mixed reef (1), small pelagics (1.5) and octopus (2).
- By comparing the maps themselves and the proxies for value chain complexity one can see that the value chains across the fisheries are very similar with regards to their complexity. The octopus fishery has slightly more nodes and pathways due to both male traders and mama karangas trading both from and to the roadside, whereas for the other fisheries the products move straight from the roadside to the consumers without an explicit connection to traders.

Mieze

Interviews with fishers and traders in Mieze, Cabo Delgado were undertaken from 28 February – 7 March 2015.

Field observations

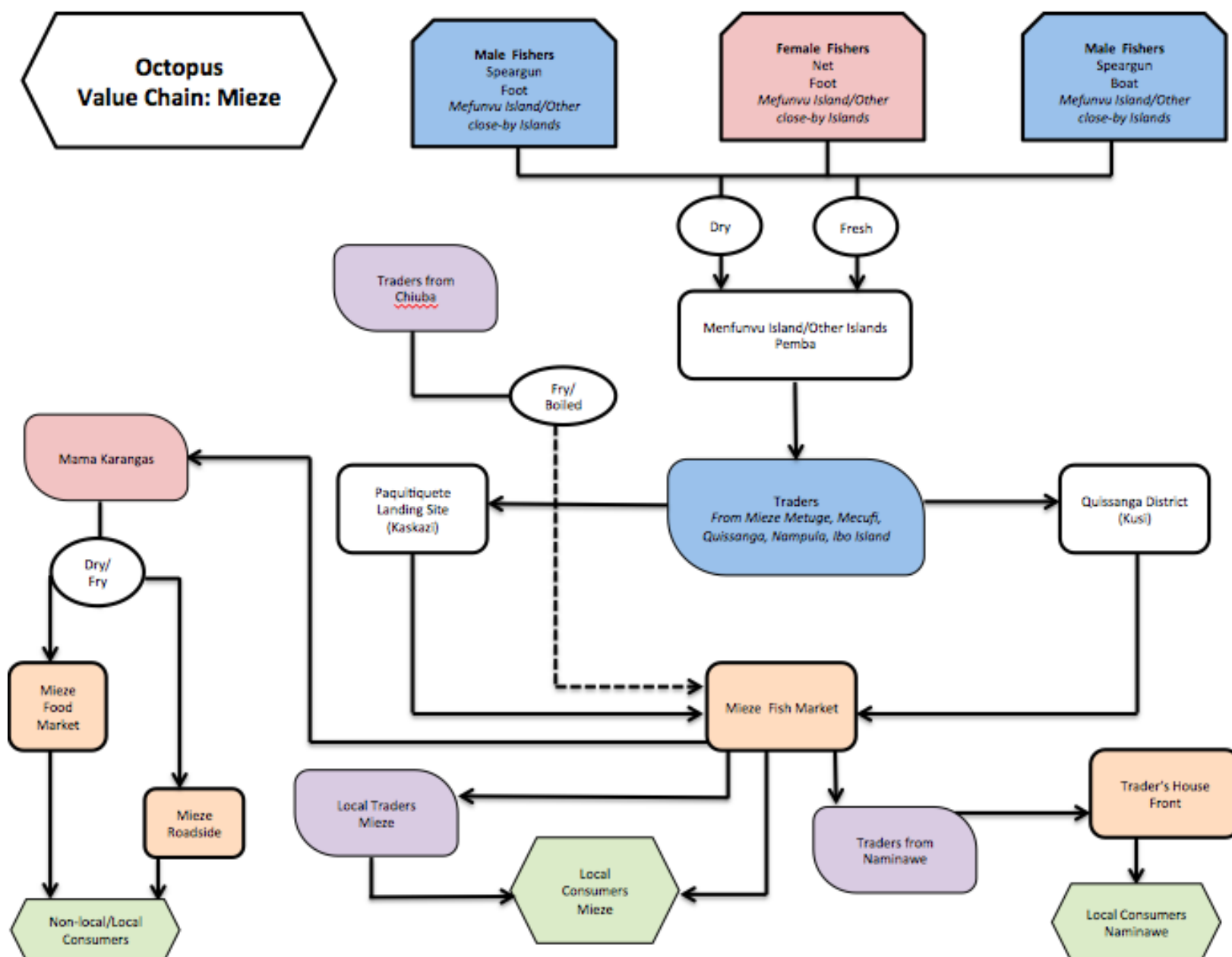
The team was received with enthusiasm, and most of the traders were very keen to collaborate with them.

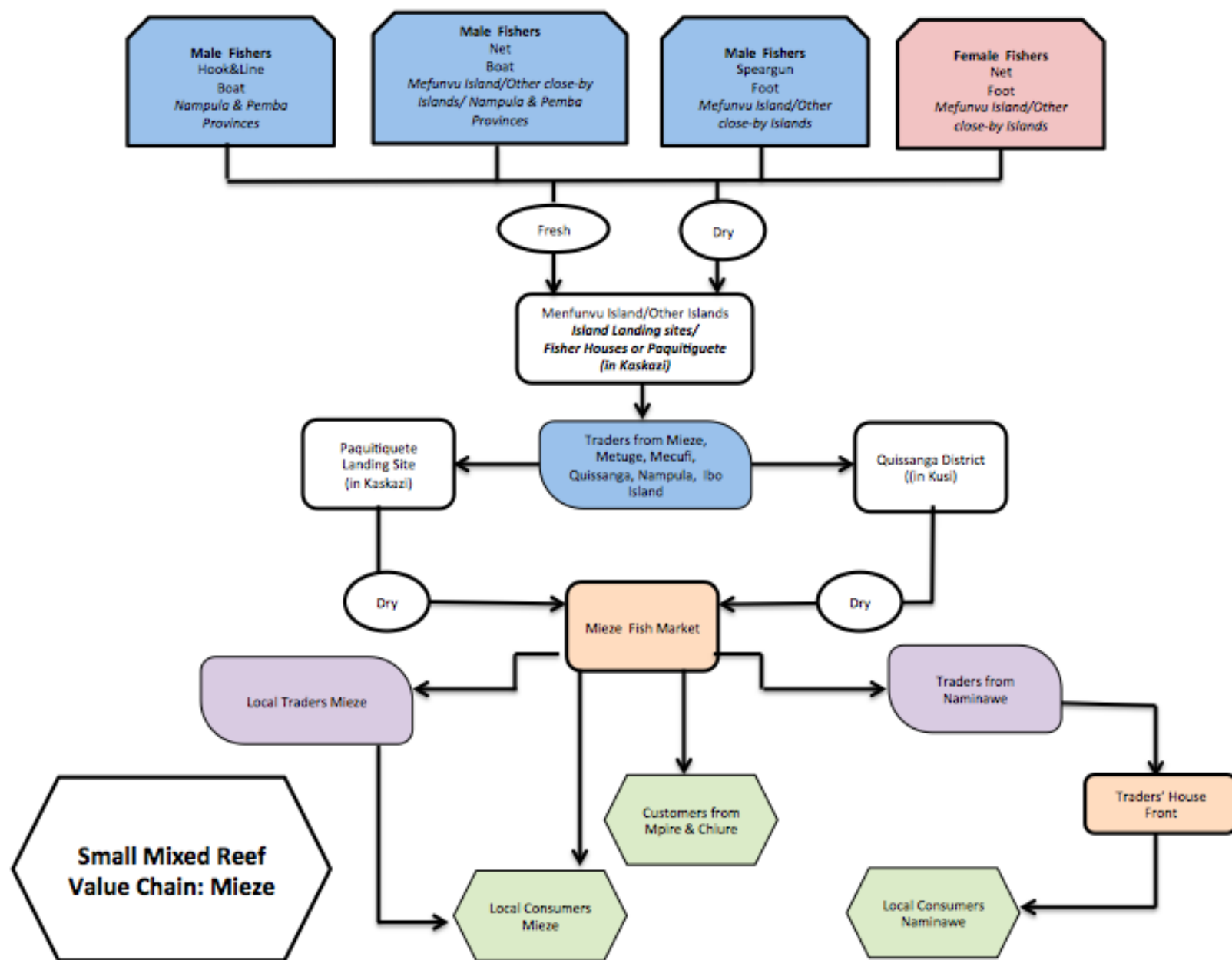
- One of the fieldwork days in Mieze, 2 traders had a big discussion (almost a fight) because of the table (place) to sell. One was saying to the other that he is new in the market and he does not have the right to sell there.
- One fisherman was in the market everyday and in the beginning he accepted to respond to the questionnaire but he gave up when he realized that the team would not pay him.
- The traders in general were very talkative and they were complaining about paying 10 MTS everyday for the market license.
- It was difficult to find more fishermen because they were in their farms and most of the traders said that the fisherman from Mieze only fish when it is not a farming season.
- One trader said that is more difficult to start the dried fisheries business than the fresh for many reasons: the dried fisheries is more expensive than the fresh one, the traders must to go to the islands to buy the fisheries because they can buy 100 KG per 10000 MTS and in Pemba they would pay 15000 MTS.
- The dried fisheries business is continuous and it must to be because is the only way to get any good profits.
- Anyone can start selling fresh fish if one has at least 500 MTS. One can also sell fresh fish for just one day.
- A fresh fisheries trader said that selling fresh fish gives more profits because they can sell everything in one day or one morning.

Value chains

P.T.O

Value chain 1: Octopus and Mixed reef fish



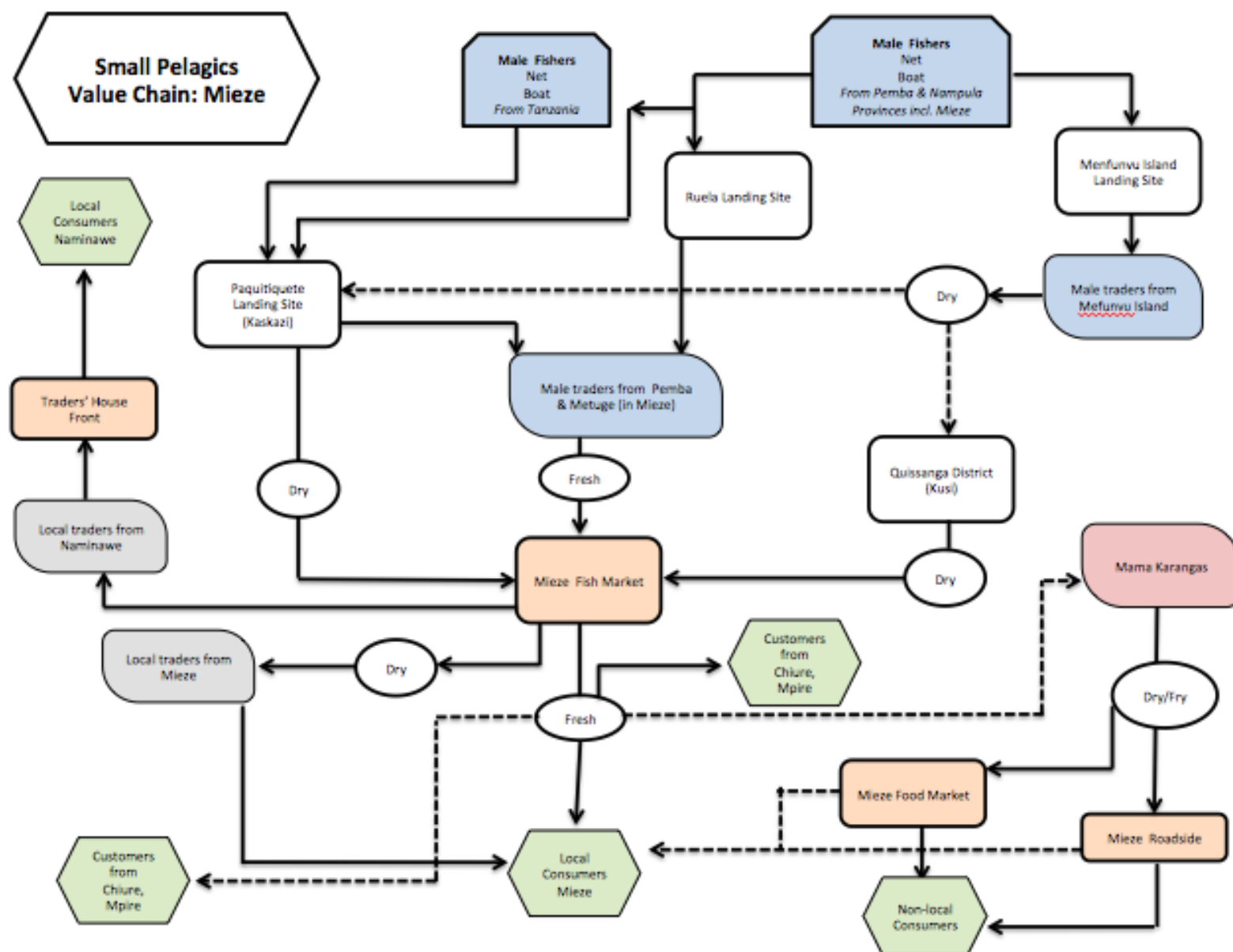


*See appendix 2.3A for the original value chain drawn in the field.

Dried Octopus and Mixed Reef fish Traders

- 13 traders were interviewed, one of which was a woman.
- The dried octopus and mixed reef fish traders are aged between 25-53 and only 2 of them are from Mize.
- The others come from Metuge, Mecufi, Quissanga, Nampula and Ibo island.
- They sell octopus, parrot fish, *Siganus* sp, *Chelio inermis*, *Parapineus* sp, *Acanturus* sp, *Decapterus* sp, *Letrinus* sp, *Scarus* sp and Njana.
- They all buy the fish in big quantities and only 2 of them buy fresh fish to salt, boil or/and dry after, the others buy the fish dried but dry it further at home to preserve it better.
- The dried octopus, mixed reef fish and small pelagic traders go to buy the fish mainly in the islands, very often in Mefunvu Island.
- The male traders buy the fish fresh (2 traders) and dried with the Women Foot Fisher, Man Diver Foot Fisher and Man Boat Fishers.
- Depending on the weather Kusi or Kaskasi they come to Mize by bus or by boat.
- In Kusi they come through the Quissanga districts to Mize and in Kaskasi they land in Paquitequete, and from there they come to Mize.
- They all sell in the Mize fishing market.
- In the market they sell to local consumers and local traders. The fish is also sold to consumers and traders from Naminawe district.
- In turn, these traders sell to the Naminawe consumers

Value chain 2: small pelagic fish



*See Appendix 2.3B for the original value chain drawn in the file

Fishers

- 7 fishers were interviewed, they are from Mize, Muxara (nearby Mize) and Namapa (Nampula province). Ages: 20, 25, 30, 39, 50 and 54.
- 5 of them use nets to catch small pelagics as well as mixed reef occasionally using hook & line.
- 4 of them have boats

Fresh Small Pelagics Traders

- The fresh small pelagic traders are young in the ages between 22-25.
- The market has at least 15 traders but only 4 of them are constant in the market. It is said that the other traders only come to sell when they have fish that day and they are not very serious about their business as they only sell when they need money. The constant traders are grouped in 2 traders per table and they have a strong relationship, some of them are siblings.
- The constant traders were always in the market even when they did not have fish to sell, they were there helping the other traders to sell their fish.
- One of the constant traders was selling chicken gizzard on a day that he did not have fish to sell.
- The traders buy the fish in Pemba earlier in the morning with a fisherman in Ruela landing site and also with Tanzanian boat fisherman in Paquitique landing site. After that they come to Mize by bus to sell the fresh fish in the fishing market during the day.
- In the market they sell the fish to mama karangas. In turn the mama karangas sell the fish on the roadside in Mize and also in the big market
- They also sell the fish to local consumers and people who comes from Mpire and Chiure (Mize nearby districts: 30 and 80km respectively), unfortunately the traders do not know what the people from outside Mize do with the fish, (they consume, sell fresh or dry to sell after...to who?)
- Only 4 fresh fish traders were interviewed. Ages: 18, 22, 24 and 29. Only 2 of them are from Mize, the other 2 are from Gingone (Pemba) and Metuge (30 minutes from Mize by car).
- They sell sardines, incalala, safi, shrimps, small mixed reef and Decapterus sp.
- On average they sell sardine for 30- 40 MTS per bunch, the Decapterus sp for 50-100 MTS and malhacao for 10- 20 MTS.
- They all have to pay 10 MTS per day as a license to sell in the market, and also 50 meticais to hire the table to sell the fish

Key informant interviews

- 3 key informant interviews were conducted with fishers that all use nets to catch small pelagics and occasionally mixed reef fish.
- Some of them consider that the relationship among them and traders is good because sometimes they help the fishermen with fishing material and sometimes the traders ask for some kind of fish.
- 8 key informant interviews were conducted with traders, they all sell dried fish in the market and they have a good relationship with the others traders. They combine the prices together and all agreed that the relationship between them with the fisherman is very important. Their clients have a lot of influence in what they buy.
- 4 key informant interviews were conducted with well- informed residents. They only noted a change in the different weather: Kusi and Kaskasi, and they said that it is normal because it was always like this.

A comparison of the value chains across the fisheries (mixed reef, small pelagic and octopus) in Mize.

General Characteristics of the value chains and fisheries

- There are few female fishers in Mize, with no female fishers reported in the small pelagics fishery.
- A variety of gear types and transport forms are used across the fisheries.
- The mixed reef fishery uses the greatest number of gears (hook & line, net and speargun) while the small pelagic fishers use only nets and the octopus fishers use speargun and nets.
- The octopus and mixed reef fisheries use both boats and 'foot' while the small pelagic fishers only employ boats.
- There appears to be less female than male traders across the different fisheries. In the mixed reef fishery though, there is no indication of whether the traders are male or female.
- In terms of markets, there are 5,7 and 8 markets for mixed reef, octopus and small pelagic fish respectively.
- In Mize all of the fish is sold fresh or dried. The octopus is also available fried and boiled and small pelagics can also be bought fried.

Value Chain Complexity

- Across all the fisheries in Mize, the octopus fishery has the most complex value chain.

- The proxies for value chain complexity are the following:
- Median number of nodes: Mixed reef (4), small pelagics (5) and octopus (5)
- Median number of pathways: Mixed reef (2 including landing sites and 1 excluding landing sites), small pelagics (4 including landing sites and 3 excluding them) and octopus (6 including landing sites and 4 excluding landing sites).
- Taken altogether the octopus fishery is the most complex given that it has the greatest number of pathways. Besides this, a scan of Mize's value chain maps will show one that the value chains for all the fisheries are very similar. This is because the fish is landed at the same landing sites and travels to the same market.
- The octopus fishery is only slightly more complex because there is an extra trade node (traders from Chiuba) that also sell octopus in the Mize market and thus add another pathway.

Vamizi

Introduction

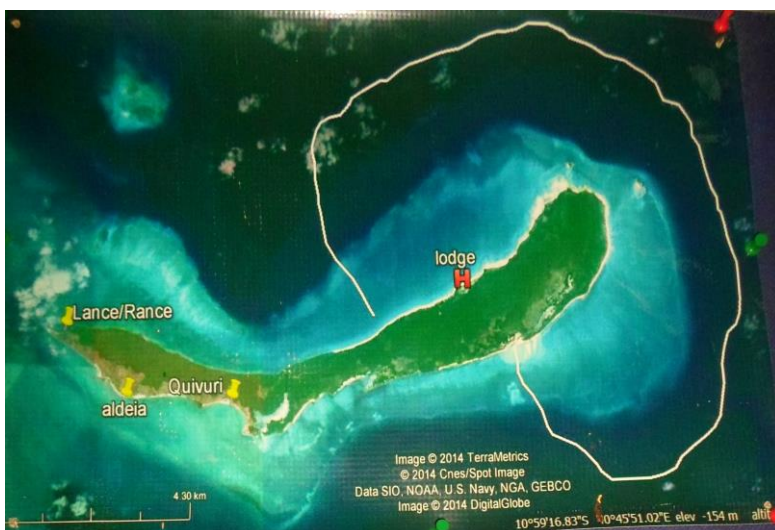
Interviews with fishers and traders were conducted in Vamizi, Cabo Delgado from 22 March – 10 April 2015.

The community in Vamizi lives in 3 different places around the island: the village called ALDEIA, QUIVURY and RANCE\LANCE.

ALDEIA is the main village. It is the place where the Vamizi natives live. Aldeia only has 2 little shops and 1 video saloon where there is a generator. It is the calmest and least developed place on the island. Most of the ladies catch octopus and the men are fisherman. It is also in Aldeia where the people have many goats and a few little farms and where the CCP (BMU) is based. This probably has a big effect on the diminishing of use of mosquito nets to fish.

QUIVURY is the most developed village where a huge mixture of culture, languages and people coming from different places are. In this village it is possible to find people who come from districts of Cabo Delgado and Nampula province and also from Tanzania and surrounding islands. In Quivury it is possible to find a huge number of traders, fishers, tea saloons, video saloons, big and small boats and plenty of water coming from Olumbe to be sold to the community in the island.

RANCE\LANCE is a place that looks more like a fishing camp where one of the biggest part of the migrant fishing community is installed. It is more developed than Aldeia but it is also smaller; the houses are grouped in a small space turned to the sea. It is the nearest point to Olumbe and is where many people including fisherman and fish traders are dedicated to water trading.



Interview participants

Fishermen

The respondents were fishers who use different types of gear and transport: fishermen who use boat and net, boat and spear gun, boat and hook & line and fishermen who uses boat and trap.

Most of the fishermen use boats due to the fact that their fishing area surrounds the island. They use 3 types of boats: Ntumbwi (canoe) and Ngalawa (sailing boat) and Quiboti (motor boat).

The fishermen in the island are constituted by the natives and the immigrant's fishermen coming mostly from districts of Nampula and Tanzania. In general most of the fishermen in the island are divers and uses a spear gun to fish mixed reef fish.

Altogether 30 fishermen were interviewed in Aldeia, Quivury and Rance:

- 11 fishermen who use hook & line to catch only a mixed reef coral fish: 2 of them in Aldeia, 2 in Quivury and 7 in Rance.
- 8 fishermen who use a spear gun: in this group of 8, only 2 of them use a spear gun to catch only octopus (Aldeia) and another 3 use a spear gun to catch only mixed reef coral fish (Quivury), the remaining 3 use a spear a gun to catch both octopus and or mixed reef coral fish (Quivury and Rance).
- 7 fishermen who use a net to catch only a mixed reef coral fish: 4 of the 7 were interviewed in Aldeia, 2 in Quivury and 1 in Rance.
- 3 fishermen who use a trap were interviewed (Aldeia), all of them use a trap to catch mixed reef coral fish but 2 of them are also catch octopus.
- 1 fisherman who uses a spear gun and a hook & line as his main fishing equipment was interviewed (Aldeia). He catches mixed coral reef fish and octopus.

Fisherwomen

This group was made up of older and young ladies living in Aldeia and Quivury.

There are 2 types of fisherwoman on the island: the native fisherwoman who only catches octopus using a spear gun and the women who use a net and mosquito net to catch small pelagics (this group are based in Quivury but some of the fisherwoman also live in Aldeia).

15 fisherwomen were interviewed, both from Aldeia and Quivury.

- 10 fisherwomen who catch octopus were interviewed: 9 fisherwoman in Aldeia that all use a spear gun as fishing equipment. Only 1 fisherwoman from Quivury catches octopus but her principal fishing equipment is a net.
- 5 fisherwomen who catch small pelagics were interviewed in Quivury, in this group, 3 of them use a net and the other 2 use a mosquito net to fish.

Traders

Local and immigrants traders constitute the group of traders on the island. Both men and women are part of this group and their age ranges from 20-80.

Many of the immigrants traders live on the island for a short period of time, just to buy enough quantity of the fish and the others only go to the island when a local trader tells them to.

Altogether 35 traders were interviewed:

- 4 female trader were interviewed: 3 from Quivury and 1 from Rance. In this group, only 1 of them sells dried octopus and mixed reef fish, the others only sell dried mixed reef fish. 1 of the Quivury traders is a Mama Karanga who sells fried mixed reef fish.
- 4 male traders were interviewed in Aldeia and they all sell dried octopus and mixed reef. Only 1 of these traders is an immigrant from Olumbe, the others are natives.
- 13 male traders were interviewed in Quivury, most of them sell dried octopus and mixed reef fish and only 3 of them sells only mixed reef fish.

Unfortunately it was impossible to find a small pelagic trader because there are so few of and they do not have a settlement on the island.

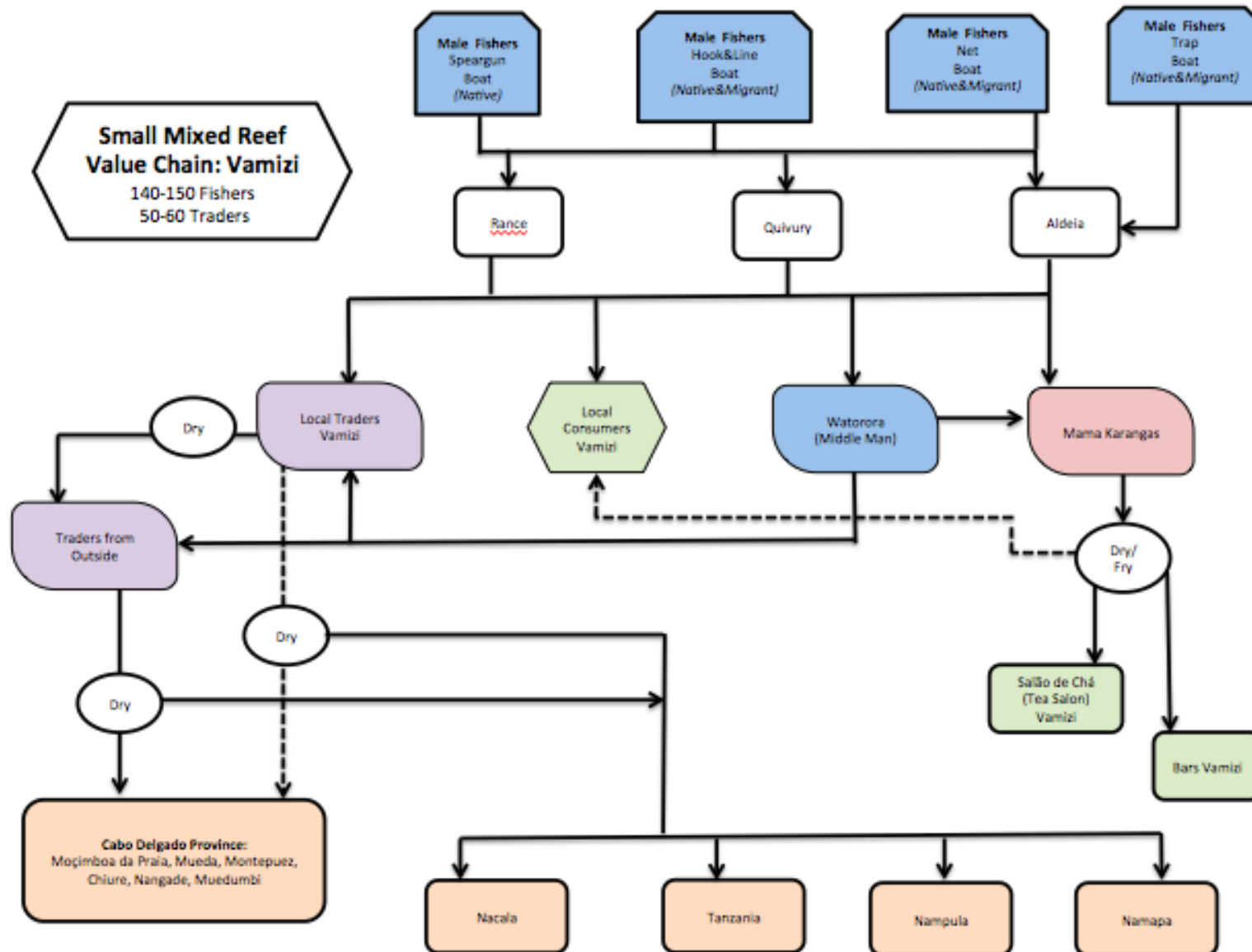
Watorora

Watorora is the local name for a middle man; men and women who buy the fish on the beach when the fishermen are landing and take it to sell to the remaining traders and consumers.

Value Chains

P.T.O

Value Chain 1: mixed reef fish



*See Appendix 2.4A for the original drawing of the value chain from the field.

Description of the Chain

The groups that fish mixed reef fish sell it fresh to local consumers, to the mama karangas, the watorora and the local traders.

The watorora (middle-man) buys the fish from all the fisher's groups in the beach, and then takes the fish to re-sell to Mama Karangas, local traders and non-local traders.

The Mama Karangas sell the fish fried in bars, tea saloons and on the beach to local consumers (including immigrant fishermen and traders).

Local traders that have a deal with traders from outside, call them to come to the island and buy dried fish. The local traders also take the fish to sell in inland districts of Cabo Delgado: Mocimboa da Praia, Mueda, Montepuez, Chiure, Nangade and Muedumbi; and to other places outside the province: Namapa, Nacala, Nampula and Tanzania.

The traders from outside buy the fish from the fisher groups, watorara and also from local traders. When they buy fresh fish, they also process it on the island.

After the fish has been dried it is taken in big quantities to be sold in the districts of the province: Mocimboa da Praia, Mueda, Montepuez and Chiure and also outside the province: Namapa, Nacala, Nampula and Tanzania.

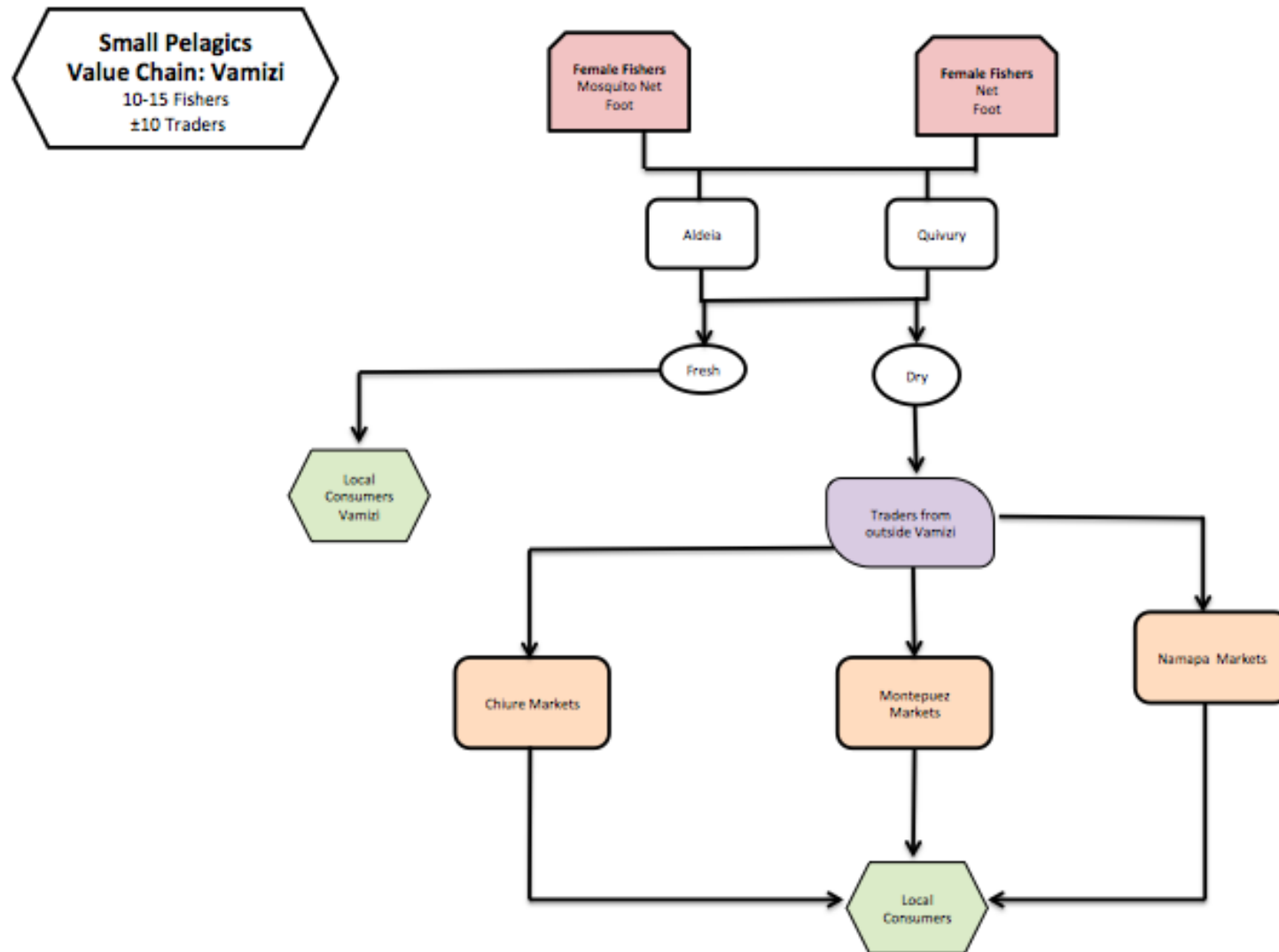
How Traders Process the Fish and Octopus

The local traders process the fish at home; they clean the fish and place it down with a lot of salt to rest for one night. The next day the fish is washed and placed in the sun to dry.

Once the traders have a large quantity of dried fish, they call traders from outside to buy their product.

The fishermen and traders process octopus by removing the ink first and hitting them on the beach sand using a stick. After this, they tie the octopus to a stick and allow the waves to hit and wash the octopus. The next day octopus is placed in the sun to dry. Not all fisherman and/or traders leave the octopus in the sea, some of them only wash and dry it in the same day.

Value chain 2: Small pelagic fish



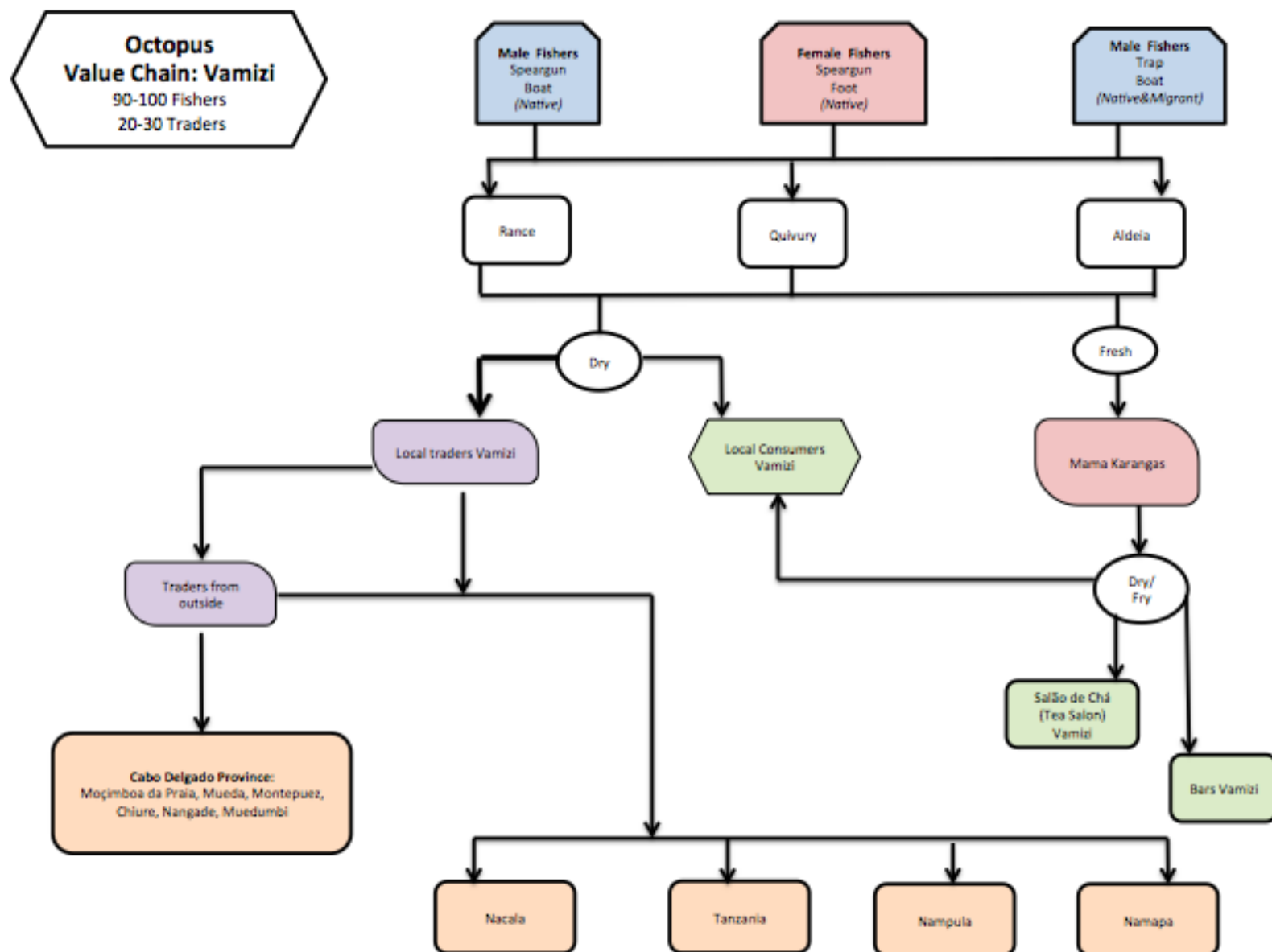
*See Appendix 2.4B for the original drawing of the value chain done in the field.

Description of the Chain

The groups of female fishers who use a mosquito net and nets to fish, sell the fresh fish to local consumers and also take the fish to their house to dry it.

The dried fish is sold to some outside traders. In turn the traders sell the fish to the local consumers in inland districts such as Namapa in Nampula province and Montepuez and Chiure in Cabo Delgado.

Value chain 3: Octopus:



*See Appendix 2.4C for the original value chain drawn in the field.

Description of the Chain

The foot female fisherwomen and the male fishers who also use a spear gun are the ones who catch octopus.

These groups sell the fresh octopus to the Mama Karangas and the dried octopuses to the local consumers (sometimes), and also to the local traders.

The local traders sell it dried to the traders from outside and also take the dried octopus to sell in various inland districts. The local and outside traders sell the octopus in the same places: inland districts of the province (Mocimboa da Praia, Mueda, Montepuez, Chiure, Nangade and Muedumbi), in the other province and its district (Nampula and Namapa) and also outside the country (Tanzania).

A comparison of the Value Chains across the different fisheries (mixed reef, small pelagic and octopus) in Vamizi.

General Characteristics of the value chains and fisheries

- In general, female fishers are in the minority in Vamizi, however in the small pelagic fishery there were only female fishers reported.
- The gears used across the fisheries are the following: Octopus (speargun and trap) Mixed Reef (speargun, hook & line, net and trap), Small pelagics (mosquito net and net)
- The female small pelagic fishers do not use boats to fish while the other two fisheries use both 'foot' and boats.
- In Vamizi there is no account of only male traders across the fisheries. Instead there are a number of trader nodes without any gender specification and a female trader node in the mixed reef and octopus fisheries.
- In terms of markets, there are 11, 10 and 5 markets for mixed reef, octopus and small pelagic fish respectively.
- The traders of Vamizi sell their mixed reef fish and octopus fresh, fried or dried. The small pelagic fish is available fresh or dried.

Value Chain Complexity

- The proxies for value chain complexity are the following:
- Median number of nodes: Mixed reef (2), small pelagics (4) and octopus (2)
- Median number of pathways: Mixed reef (6 including landing sites and 2 excluding landing sites), small pelagics (4 including landing sites and 2 excluding them) and octopus (3 including landing sites and 1 excluding landing sites).
- Of the three fisheries in Vamizi, the octopus is the simplest as consumers either get the product straight from the fisherman or at tea salons/bars through the mama karangas. This is interesting as in every other site, the octopus fishery appears to have the most complex value chain. A possible reason for this is that octopus appears to be predominantly consumed by local consumers, whereas at the other sites it is also consumed by consumers in other districts and further afield, thus increasing the complexity of these value chains and simplifying the octopus value chain in Vamizi.
- The other fisheries are slightly more complex. In the mixed reef fishery there is a watororo (middleman) which adds an extra node and pathway. Despite this watororo, the octopus and mixed reef fishery value chains are almost identical.
- The small pelagic fishery on the other hand appears very different and is the most complex of the three. This is because there are three different markets that local consumers can acquire small pelagic fish from and the fish passes through a trader node before arriving at these markets. This has increased the number of pathways and nodes

A comparison of the value chains of the mixed reef fish, small pelagic fish and octopus fisheries across sites

Mixed Reef Fish

General Characteristics of the value chains and sites

- Female fishers are in the minority with no female fishers reported in Vamizi.
- A number of different gear types and boats are used in different combinations across the sites. These include mosquito net, net, hook and line, spear gun and trap. The boat or transport types include foot, boat, ngalawa (canoe) and ntumbwi (sailing boat).
- The fishers are both local and migrant fishers. In Vamizi and Mieze the fishers come from a number of different areas. In Lalane and Maringanha the origin of the fishers is not specified. This may indicate that only locals fish at these sites.
- All sites used 4-5 combinations of gear and transport types. Lalane has the greatest number of gear types used. Maringanha employs the greatest number of gear and transport combinations.
- In general the fish is taken to landing sites. Some locations have multiple landing sites while in other areas the landing sites have not been specified. The presence of multiple landing sites may be a source of complexity for the value chains.
- The products move from the fishers to traders, markets or consumers. In some cases this movement is more direct, going straight to consumers while in other sites the products must pass through a number of hands or markets before arriving at the end point. Lalane and Maringanha seem to have the most direct movement of fish, straight to consumers and traders, with little use of markets or 'middlemen'.
- The mixed reef fish is sold fresh, dried or fried. Lalane and Vamizi process their fish in each of these ways. Maringanha and Mieze only sell their fish fresh or fried.
- The sites have 3-4 trader nodes. These may be local male or female traders, non-local traders and mama karangas.
- The sites have between 3 and 4 'end points'. An end point refers to a customer, hotel or restaurant/tea salon where the VCA maps have indicated that the fish has reached its 'final destination'. Maringanha has the largest number of end points. But many of the endpoints are simply markets where the fish could potentially be sold on to other traders or to final consumers.
- In terms of markets, Maringanha and Vamizi have the most (at 11) while Lalane and Mieze have 7 and 5 respectively.

Value Chain complexity

- According to the number of nodes the products must pass through before the end point, Mize appears to have the most complex value chain.
- The fish may go through as many as 5 nodes. The median number of nodes is 4. This is higher than the other sites that have modes of 3, 2 and 2 for Lalane, Maringanha and Vamizi respectively.
- In Mize there is no direct sale of fish to consumers by the fisherman, whereas this occurs in all other sites.
- A possible reason for this high number of nodes may be because the Mize market is far away from Peguitique and Mfenvu Island, where the majority of fish is landed. Furthermore the journey to Mize market is long and can be taken by boat or bus (as a result, the only fish available in the market is dried as it makes little sense to sell fresh fish due to the transport issues).
- Another possible reason for Mize's complexity is that it has the highest number of trader nodes. This is because there are many traders from different areas such as Naminawe and Metuge. This differs from the other sites where the majority of traders appear to be local.
- Mize also has the highest number of consumer nodes (3) with both local and non-locals consuming the MR fish. The other sites have just 1 or 2 consumer nodes. Vamizi, for instance, appears to sell only to local consumers.
- In terms of the number of pathways available for the products, Vamizi appears to be the most complex.
- When landing sites are included it has a median of 6 which is significantly higher than Lalane, Maringanha and Mize which have 1, 1 and 2 respectively.
- When landing sites are excluded, this difference is much less pronounced with Mize having a median of 2 and all other sites having just 1.
- Thus the number pathways are largely affected by the number of landing sites, of which there are 3 in Vamizi.
- The number of pathways may also be influenced by the presence of 'wateroro' or middlemen which do not appear in any other sites.
- However if one examines Vamizi's value chain, despite the presence of multiple landing sites and wateroro, it is generally straightforward. A single trader node sells to a number of different markets and end points and the products pass through comparatively few hands.
- Vamizi and Maringanha appear to have very similar and largely simple value chains of mixed reef fish. For example, Maringanha female and male traders sell to 5 different markets while in Vamizi non-local

traders also sell to 5 markets. These traders acquire their fish directly from landing sites or fishers, allowing for a more straightforward chain.

Small Pelagic Fish

General Characteristics of the value chains and sites

- Female fishers are largely in the minority with no female fishers reported in Mizeze, however there are *only* female fishers in Vamizi.
- The gear types used are the following: hook and line, net and mosquito net. Boat, ntumbwi and 'foot' are the three types of transportation used.
- At all of the sites, the female fishers are all 'foot fishers'.
- There is at most only 3 combinations employed in Maringanha, only 2 combinations in Lalane and Vamizi and in Mizeze only boat and net are employed.
- In general the fish is taken to landing sites where it moves either directly to consumers or to traders and markets.
- Lalane and Maringanha seem to have the most direct movement of fish, straight to consumers and traders.
- The small pelagics are sold fresh, dried, fried or boiled. Maringanha and Mizeze sell their fish fresh, fried or dried. Vamizi only sells fresh or dried pelagics and Lalane boils its fish in addition to selling it fresh and dried.
- The sites have 1-5 trader nodes. These may be local male or female traders, non-local traders and mama karangas.
- Vamizi has only one trader node of outside traders.
- Mizeze has the highest number of trader nodes. These are local traders, traders from neighboring areas (such as Naminawe and Mefumvu) and mama karangas.
- In terms of markets, Maringanha has the most (at 10). Lalane and Vamizi have 5 and Mizeze has 8.
- The number of consumers at these sites range from 1-5 nodes. Lalane has the least and Mizeze the most

Value Chain complexity

- Mizeze appears to have the most complex chain.
- It has the highest median number of nodes (5) compared to Lalane (1), Maringanha (1) and Vamizi (4).
- It also has the highest median number of pathways (4, including landing sites and 3, excluding landing sites) compared to Lalane (1), Maringanha (1,5) and Vamizi (4 including landing sites and 2 excluding landing sites).

- The complexity of Mize's value chain may be attributed to:
- Having the highest number of trader nodes. Which is significantly higher than the other sites at 5. Vamizi has only 1 while Lalane and Maringanha have 2 and 3 respectively. Once again this is because there are a high number of traders from outside areas (such as Metuge and Naminawe) whereas the other sites seem to have largely local traders (however the origin of the traders is not specified in all the maps so this is uncertain).
- Multiple Landing sites. Mize has 3 different landing sites for small pelagic fish. Lalane and Maringanha have not indicated landing sites while Vamizi had just 2. The presence of many landing sites is likely to complicate the value chain as it allows for increased trader nodes, adds to the transportation needed for the products and increases the number of pathways.
- The high number of nodes is accredited to the fact that the landing sites are away from the Mize Market where the majority of trade seems to occur. Furthermore Mize Market appears to act as a central node where many traders acquire the produce and trade further on, complicating the value chain more.
- Lalane and Maringanha appear to have very simple and similar value chains with the fish being sold directly to consumers or passing through at most one trader node.
- Lalane has only local consumers.

Octopus

General Characteristics of the value chains and sites

- The fishers involved in octopus fishing are predominantly male with no female fishers in Lalane and Maringanha at all.
- Spear gun, hook and line, net and trap are the types of gear utilized at the different sites, with boat and foot being the only two transport alternatives.
- The origins of the fishers in Lalane and Maringanha are not specified but in Mize the fishers are largely locals from nearby islands and in Vamizi there are both local and migrant fishers.
- 3 of the 4 sites use landing sites or transfer their catch straight to markets. In Lalane, no landing site has been specified and fishers deliver their produce directly to traders and consumers, although this also occurs in Maringanha.
- The octopus is sold fresh, dried, fried or boiled. In Lalane the preference is for fresh and dried fish, in Maringanha it is available dried or fried, in Mize it is dried, fried or boiled and in Vamizi it can be bought fresh, dried or fried.

- The sites have 2-5 trader nodes. These may be local male or female traders, non-local traders and mama karangas.
- Mieze, once again has the largest number of trader nodes and Maringanha has only 2 while Lalane and Vamizi have 3 each.
- The number of markets range from 2 to 10. Vamizi has the most markets (10) and Lalane Maringanha and Mieze have 2, 4 and 7 respectively.

Value Chain Complexity

- Once again Mieze has the most complex value chain across the four sites.
- It has a median of 5 nodes compared to Lalane (4), Maringanha (2,5) and Vamizi (2).
- It also has the highest median number of pathways (6 including landing sites and 4 excluding landing sites). The other sites have very few pathways in comparison with Lalane (1), Maringanha (1) and Vamizi (3 including landing sites and 1 excluding landing sites).
- The possible reasons for the complexity of Mieze's octopus value chain is generally the same as for the other fisheries as previously discussed:
- High number of trader nodes. Mieze has 5 trader nodes compared to Lalane and Vamizi that have 3 and Maringanha with only 2.
- Multiple landing sites.
- Transportation of products from landing sites to Mieze market (which is reportedly long). This increases the number of times the products change hands. Thus increasing the nodes and number of pathways the products travel through.

Summary of key findings

Please find below a brief summary of the value chain comparisons across the different sites and fisheries. Noted below are general characteristics, anomalies and patterns.

General Characteristics of the value chains, sites and fisheries

Gender

- Female fishers appear to be in the minority across all sites and fisheries, except in Vamizi's small pelagic fishery where female foot fishers seem to be the only ones using this resource in the area.
- In Lalane and Maringanha's octopus fishery, Mize's small pelagic fishery and Vamizi's mixed reef fishery there are no female fishers present.
- Across all the sites and fisheries, there is no report of female fishers using boats to fish. They are all 'foot fishers'.
- Female traders also appear to be in the minority across the sites and fisheries, except in Maringanha's mixed reef fishery where there is reportedly more female than male traders. This is due to the presence of Mama Karangas at this site.
- Despite this, many sites have not specified the gender of each trader node thus this observation may not always be the case.

Gear and transport use

- Across all of the sites, mixed reef fishers use the greatest variety of gear types.
- These include: net, mosquito net, spear gun, trap and hook & line.
- Octopus fishers all use the same gear types as mixed reef fishers, except mosquito nets.
- Small pelagic fishers predominantly use net and mosquito net, with only one group in Lalane using hook & line as well.
- Most of the sites' fishers use a combination of boats (including ntumbwis and ngalawas) and 'foot'.
- In the Mixed reef fishery in Vamizi, small pelagic fishery in Mize and the octopus fishery in Lalane, only boats are used.
- As stated, the female fishers in Vamizi do not have boats.

Markets and trader nodes

- Across all of the sites, the mixed reef fishery has the greatest number of markets where the fish is delivered and sold. The small pelagic fishery has the second greatest number of markets and the octopus fishery the least.
- The fact that mixed reef fish is delivered to more markets may be because of the variety of fish that is caught in the fishery. This may mean that the fish appeals to a greater audience or that it is more popular across the districts.
- Across the fisheries, Vamizi delivers its fish to the greatest number of markets. Maringanha has the second greatest number of markets, then Mieze and Lalane has the least markets.
- The mixed reef fishery in Vamizi is the only site and fishery that has watororo (middleman). This could be because Vamizi has three different landing sites. The wotororo are men and women who visit the different landing sites and then sell the fish on to different traders. Thus Vamizi's mixed reef fishery may be the only site that requires or allows for watororo.
- Mieze has the highest number of trader nodes across all of the sites. This is because Mieze has a high number of non-local traders that trade on the way to and at Mieze market that is some distance away from the main landing sites in the area.

Complexity

- Mieze has the most complex value chain across all of the fisheries.
- It generally has the highest median number of nodes that the products pass through before the end consumer and the highest median number of pathways that the products could travel along.
- This is due to several possible reasons:
- High number of traders. As stated above, Mieze market is far away from Peguitiquete and Mfenvu Island, where the majority of fish is landed. Furthermore the journey to Mieze market is long and can be taken by boat or bus. This increases the number of 'stopover' points that the fish can make and thus the number of trader nodes. Furthermore there are many non-local traders at Mieze market.
- In Mieze there is no direct sale of fish to consumers by the fisherman, whereas this occurs in all other sites.
- Multiple landing sites. It is apparent that a higher number of landing sites is correlated with a higher median number of nodes and pathways. This is because having multiple landing sites means that the fish has alternative routes to travel and more 'stopover' opportunities thus increasing the number of nodes and pathways.

- The octopus fishery is the most complex fishery across all of the sites, except in Vamizi where it is the simplest.
- The reason why the octopus fishery is the simplest in Vamizi is because there are only local consumer nodes in the value chain where as for the other fisheries in Vamizi, the products are consumed by non-local consumers and travel further afield. However, the octopus in Vamzii is still delivered to a number of markets outside the area and thus it is likely that it is consumed by non-local consumers too, however these nodes have not been included in the value chain.
- The reason as to why the octopus is generally the most complex of all the fisheries is not immediately apparent. The fishery does not always have more trader nodes, or markets than the other fisheries. It simply seems to have a greater median number of nodes and pathways. The overarching cause of this is unknown though.

Key issues to explore further

- What drives the discrepancies in complexity of the octopus and small pelagics value chains across sites?
- Is this related to how these site value chains link into export value chains? (as both small pelagics and octopus are known to be exported)
- Why are mixed reef fish value chains less complex in general?
- Why are the Mize value chains the most complex? Is Mize more of a trade hub than a source of fish in itself, and hence the function and characteristics of the site is reflected in this complexity?

Appendix 1: Sampling details and timeframe

Lalane

Timetable

15 March	16 March	17 March	18 March	19 March	20 March	21 March
Lalane	Lalane	Lalane	Lalane			
Meeting with the village	Question - naires 6	Question - naires 6	Question- naires 6	Question - naire 1 KI 5	Siran + Dom= Report for Lalane notes.	KI 4 Anc & Mr. Antonio =
Mapping/ semi-structured					KI 6	Write up notes/observat ions
Question – naires 6						Finish-up Lalane

Fieldwork overview

The Lalane fieldwork started with a meeting with the village members where the SPACES team presented the VCA work as well as some findings about the previous SPACES work carried out in Lalane. The team asked for patience and collaboration from the community.

After the explanation of the work (VCA) and the aims, a group of 5 people from the community followed the team to their camp because they wanted to be interviewed in that moment.

The mapping of Lalane's value chain was conducted by a team of 2 enumerators (Anchinha and Antonio) and 2 assistant coordinators (Dominique and Siran). Most of the interviewees were invited to be part of the work on their way back from the sea (the team camp was located in front of the Lalane landing site), while the rest were found in the center of the village or their houses.

A total of 7 days was spent in Lalane between the village and the landing site.

25 questionnaires were carried out both with fishermen, fisherwoman and local trader's residents in the village.

15 key informant interviews were carried out with fishermen, traders and well-informed people residents in the village.

In this site 3 value chains were followed: Mixed Reef Fish, Small Pelagics and Octopus.

List of interviews conducted

Number	Conducted By	Code	Fishery Type	Condition
1Fisherman	ANCHINHA	LAL160315ANC1	MR	
2Fish Trader	ANCHINHA	LAL160315ANC2	MR\SP\OCT	Fresh
3Fisherman	ANCHINHA	LAL160315ANC3	MR	
4Fisherman	ANCHINHA	LAL160315ANC4	MR\OCT	
5Fish Trader	ANTÓNIO	LAL160315AFS1	MR\SP\OCT	Fresh
6Fisherman	ANTÓNIO	LAL160315AFS2	MR\SP	
7Fisherman	ANTÓNIO	LAL170315AFS1	MR\OCT	
8Fisherman	ANCHINHA	LAL170315ANC1	MR\OCT	
9Fish Trader	ANCHINHA	LAL170315ANC2	MR\OCT	Fresh
10Fisherman	ANTÓNIO	LAL170315AFS2	MR	
11Female Fisher	ANCHINHA	LAL170315ANC3	SP	
12Fisherman	ANCHINHA	LAL170315ANC4	MR	
13Fisherman	ANCHINHA	LAL180315ANC1	MR	
14Fish Trader	ANTÓNIO	LAL180315AFS1	MR	Dried
15Female Fisher	ANTÓNIO	LAL180315AFS2	SP	
16Fish Trader	ANCHINHA	LAL180315ANC2	MR\SP\OCT	Fresh
17Fisherman	ANCHINHA	LAL180315ANC3	MR\OCT	

18	Fisherman	ANTÓNIO	LAL180315AFS3	MR	
19	Fisherman	ANTÓNIO	LAL180315AFS4	MR	
20	Fish Trader	ANCHINHA	LAL190315ANC1	MR\OCT	Fried
21	Fisherman	ANCHINHA	LAL190315ANC2	MR	
22	Female Fisher	ANCHINHA	LAL190315ANC3	SP	
23	Fisherman	ANTÓNIO	LAL190315AFS1	MR	
24	Female Fisher	ANTÓNIO	LAL190315AFS2	MR\SP	
25	Female Fisher	ANTÓNIO	LAL190315AFS3	MR\SP	

Maringanha

Timetable

◀ Jan 2015 ~ February 2015 ~ Mar 2015 ▶						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
15 <i>Liz and Dominique go to the supermarket</i>	16 Start: Maringanha Mapping/ Semi- structured interviews	17 Maringanha Questionnaires 3	18 Maringanha Questionnaires 6	19 Maringanha Questionnaires 6	20 Maringanha Questionnaires 2 KI Interviews 2	21 Visit Mizeze- Liz, Dominique, Siran AM: Translate to Kimwani Questionnaire s 4

◀ Jan 2015 ~ February 2015 ~ Mar 2015 ▶						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	23 Maringanha AM: Translate to Kimwani KI Interviews 2	24 Maringanha KI Interviews 2 Questionnaires 2	25 Maringanha KI Interviews 2 Questionnaire s 2 (LIZ LEAVES)	26 Maringanha KI Interviews 4	27 Finish-up: Maringanha KI Interviews 3	28

Fieldwork overview

The Maringanha mapping was conducted by a team of 2 enumerators (Anchinha and Amisse) and 3 assistants/coordinators (Dominique, Liz and Siran). A local guide from the community governmental centre assisted the team in finding respondents in their houses. A total of 11 days was spent in-field in Maringanha between the village and beach landing site.

25 questionnaires and 10 key informant interviews were carried out with fishers both from Maringanha and surrounding neighborhoods who also utilize the coastal system there. It was unfortunately not possible to speak with any fish traders as none of them live in Maringanha and they were very difficult to locate. In this site 3 value chains were followed: Mixed Reef Fish, Small Pelagics and Octopus.

List of interviews conducted

Number		Conducted By	CODE	Fishery Type
1	Fisherman	AMISSE	NAN130215AMIP	MR/SP
2	Fisherman	ANCHINHA	MAR140215ANCP	MR/OCT/SP
3	Fisherman	AMISSE	MAR140215AMI1	MR/OCT
4	Female Fisher	ANCHINHA	MAR170215ANC1	SP
5	Female Fisher	AMISSE	MAR170215AMI1	SP
6	Fisherman	AMISSE	MAR170215AMI2	MR
7	Fisherman	ANCHINHA	MAR180215ANC1	MR/OCT

8	Female Fisher	ANCHINHA	MAR180215ANC2	SP
9	Female Fisher	ANCHINHA	MAR180215ANC3	SP
10	Female Fisher	AMISSE	MAR180215AMI1	MR/SP
11	Female Fisher	AMISSE	MAR180205AMI2	MR/SP
12	Fisherman	AMISSE	MAR180215AMI3	MR
13	Fisherman	AMISSE	MAR190212AMI1	MR
14	Fisherman	AMISSE	MAR190215AMI2	MR/OCT
15	Female Fisher	AMISSE	MAR190215AMI3	MR/SP
16	Female Fisher	ANCHINHA	MAR190215ANC1	SP
17	Fisherman	ANCHINHA	MAR190215ANC2	MR
18	Fisherman	ANCHINHA	MAR190215ANC3	MR/OCT
19	Fisherman	AMISSE	MAR200215AMI1	MR
20	Fisherman	ANCHINHA	MAR200215ANC1	MR/OCT
21	Fisherman	ANCHINHA	MAR210215ANC1	MR/OCT
22	Female Fisher	ANCHINHA	MAR210215ANC2	OCT/SP
23	Female Fisher	AMISSE	MAR210215AMI1	OCT/SP
24	Fisherman	AMISSE	MAR210215AMI2	MR/SP
25	Fisherman	ANCHINHA	MAR230215ANC1	OCT
26	Fisherman	ANCHINHA	MAR230215ANC2	MR
27	Fisherman	AMISSE	MAR240215AFS1	MR/OCT
28	Fisherman	ANCHINHA	MAR240215ANC1	MR/OCT

Mieze

Timetable

◀ Jan 2015 ~ February 2015 ~ Mar 2015 ▶						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 Day off	2 Mieze Question- naires 6 KI Interviews 3	3 Mieze Question- naires 4 Anchinha 1 Qst + 2 KI Amissé 2 Qst + 1 KI Mr. Antonio 1 Qst+2 KI	4 Mieze Question- naires 3 KI Interviews 6 + Dom 1 KI (Try)	5 Mieze Finish-up Mieze Anc, Ami& Mr. Antonio = Write up notes/observ- ations	6 Siran + Dom= Report for Mieze delivery. Day off for enumerators	7 Siran + Dom= Shopping for the North CEPAM- tents+stuff Day off for enumerators
22	23	24	25	26	27 Mieze Mapping/ Semi- structured interviews 3 people Mama karanga's Mieze Question- naires 6	28 Mieze Question- naires 6 (Amissé Anchinha& Mr. Antonio) Mapping and Notes

Fieldwork overview

The Mize mapping was conducted by a team of 3 enumerators (Amisse, Anchinha and Antonio) and 2 assistant/coordinators (Dominique and Siran).

Most of the respondents were found in the fishing market in the village and few of them were interviewed in their houses. A total of 8 days was spent in-field in Mize between the fishing market and the fishermen's houses. 25 questionnaires were carried out with traders and fishers both from Mize and surrounding districts and islands who also utilize the coastal system to fish or travel. It was unfortunately not possible to speak with fish traders

and fishermen in the same proportion as only a few of the fishermen live in Mize and they were very difficult to locate due to their fishing activity.

In this site 2 value chains were followed: Fresh Small Pelagics and Dried Octopus & Mixed Reef Fish.

The respondents were fresh fish traders, dried fish and octopus traders and a few fishermen. All the fresh fish traders are young (aged 25-30) and octopus traders are between the ages of 20 and 55. The fishermen are between the ages of 20-45.

No fresh octopus trader was found and only one woman selling dried shrimps was seen in the market during the fieldwork.

5 Key Informant interviews were carried out with traders, fishers and well-informed residents in Mize.

List of interviews conducted

				Fishery	
Number		Conducted By	CODE	Type	Condition
1	Fish Trader	ANCHINHA	MIE270215ANC1	MR/OCT	Dried
2	Fish Trader	ANCHINHA	MIE270215ANC2	MR/OCT	Dried
3	Fish Trader	AMISSE	MIE270215AMI1	MR/SP/OCT	Dried
4	Fish Trader	AMISSE	MIE270215AMI2	MR/OCT	Dried
5	Fish Trader	ANTÓNIO	MIE270215AFS1	MR/SP/OCT	Dried
6	Fish Trader	ANTÓNIO	MIE270215AFS2	SP	Dried
7	Fish Trader	ANCHINHA	MIE280215ANC1	MR	Dried
8	Fisherman	ANCHINHA	MIE280215ANC2	SP	
9	Fisherman	ANTÓNIO	MIE280215AFS1	MR	
10	Fish Trader	ANTÓNIO	MIE280215AFS2	MR	Dried
11	Fish Trader	AMISSE	MIE280215AMI1	MR/OCT	Dried

12	Fisherman	AMISSE	MIE280215AMI2	MR	
13	Fish Trader	AMISSE	MIE020315AMI1	MR	Fresh
14	Fisherman	AMISSE	MIE020315AMI2	MR	
15	Fish Trader	ANCHINHA	MIE020315ANC1	MR/SP	Fresh
16	Fisherman	ANCHINHA	MIE020315ANC2	MR/SP	
17	Fish Trader	ANTÓNIO	MIE020315AFS1	MR/SP	Fresh
18	Fish Trader	ANTÓNIO	MIE020315AFS2	MR/OCT	Fresh
19	Fisherman	AMISSE	MIE030315AMI1	MR/SP	
20	Fish Trader	ANCHINHA	MIE030315ANC1	MR/SP	Dried
21	Fish Trader	ANTÓNIO	MIE030315AFS1	MR/SP	Dried
22	Fish Trader	ANTÓNIO	MIE030315AFS2	MR	Dried
23	Fish Trader	ANCHINHA	MIE060315ANC1	MR/OCT	Dried
24	Fish Trader	ANTÓNIO	MIE060315AFS1	MR/SP/OCT	Dried
25	Fisherman	AMISSE	MIE060315AMI1	MR/SP	

Vamizi

Timetable

◀ March ~ April 2015 ~ May ▶						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 Vamizi	2 Vamizi	3 Vamizi	4 Vamizi
			Questionnaires 6	Questionnaires 6	Questionnaires 6	Questionnaires 6 KI 2
5 Day Off	6 Vamizi	7 Vamizi	8 Vamizi	9 Vamizi	10 Vamizi	11 Travelling to Pemba?
	Questionnaires 6 KI 2	Holiday	Questionnaires 6 KI Interviews 2	KI Interviews 5	Leaving Vamizi	

22 Travelling to Vamizi	23 Vamizi	24 Vamizi	25 Vamizi	26 Vamizi	27 Vamizi	28 Vamizi
	Mapping/semi-structured	Question-nares 6 SIRAN+DOMI 3 KI	Question-nares 6 2	Question-nares 6 2	Question-nares 6 2	Question-nares 6 2
29 Day off	30 Vamizi	31 Vamizi				
	Question-nares 6 2	Question-nares 6 2				

Fieldwork overview

The Vamizi fieldwork also started with a meeting with the village Members where the SPACES team presented some findings about the last SPACES work carried out in Vamizi and the team also presented the VCA work and asked for patience and collaboration from the community.

Due to the differences between the sites in the islands, the number of the questionnaires and key informant interviews were divided into these 3 sites: 25 questionnaires were conducted in Aldeia, 25 in Rance and 30 in Quivury. The key informant was done randomly between these sites.

The Vamizi mapping was conducted by a team of 2 enumerators (Anchinha and Antonio) and 2 assistant/coordinators (Dominique and Siran). A total of 17 days was spent in-field in Vamizi between the landing sites in the villages and in the fishing community. 80 questionnaires and 25 key informant interviews were carried out with fishers and traders both from Vamizi and surrounding places who also utilize the coastal system there. In this site 3 value chains were followed; Mixed Reef Fish, Small Pelagics and Octopus.

List of interviews conducted

				Fishery	
Number		Conducted By	CODE	Type	Condition
1	Female Fisher	ANCHINHA	VAM230315ANC1	OCT	
2	Female Fisher	ANCHINHA	VAM230315ANC3	OCT	
3	Fisherman	ANCHINHA	VAM230315ANC2	MR	
4	Female Fisher	ANCHINHA	VAM240315ANC1	OCT	
5	Female Fisher	ANCHINHA	VAM240315ANC2	OCT	
6	Female Fisher	ANCHINHA	VAM240315ANC3	OCT	
7	Fisherman	ANTÓNIO	VAM240315AFS1	MR	
8	Fisherman	ANTÓNIO	VAM240315AFS2	MR	
9	Female Fisher	ANCHINHA	VAM240315ANC4	OCT	
10	Fish Trader	ANTÓNIO	VAM240315AFS3	MR\OCT	Dried
11	Fisherman	ANTÓNIO	VAM240315AFS4	OCT	
12	Fisherman	ANTÓNIO	VAM250315AFS1	MR\OCT	
13	Female Fisher	ANTÓNIO	VAM250315AFS2	OCT	
14	Fish Trader	ANTÓNIO	VAM250315AFS3	MR\OCT	Dried
15	Fish Trader	ANCHINHA	VAM250315ANC1	MR\OCT	Dried
16	Fisherman	ANCHINHA	VAM250315ANC2	MR\OCT	
17	Fisherman	ANCHINHA	VAM250315ANC3	OCT	
18	Female Fisher	ANCHINHA	VAM260315ANC1	OCT	

19	Female Fisher	ANCHINHA	VAM260315ANC2	OCT	
20	Fisherman	ANTÓNIO	VAM260315AFS1	MR	
21	Fish Trader	ANTÓNIO	VAM260315AFS2	MR\OCT	Dried
22	Fisherman	ANTÓNIO	VAM260315AFS3	MR	
23	Fisherman	ANTÓNIO	VAM270315AFS1	MR\OCT	
24	Fisherman	ANTÓNIO	VAM270315AFS2	MR\OCT	
25	Fisherman	ANTÓNIO	VAM270315AFS3	MR\OCT	
26	Female Fisher	ANCHINHA	VAM270315ANC1	SP	
27	Female Fisher	ANCHINHA	VAM270315ANC2	OCT	
28	Female Fisher	ANCHINHA	VAM270315ANC3	SP	
29	Fisherman	ANTÓNIO	VAM280315AFS1	MR	
30	Fish Trader	ANTÓNIO	VAM280315AFS2	MR	Fried
31	Female Fisher	ANCHINHA	VAM280315ANC1	SP	
32	Fisherman	ANCHINHA	VAM280315ANC2	MR	
33	Fish Trader	ANTÓNIO	VAM280315AFS3	MR\OCT	Dried
34	Fish Trader	ANCHINHA	VAM280315ANC3	MR\OCT	Dried
35	Fish Trader	ANCHINHA	VAM300315ANC1	MR\OCT	Dried
36	Fisherman	ANCHINHA	VAM300315ANC2	MR	
37	Fish Trader	ANCHINHA	VAM300315ANC3	MR\OCT	Dried
38	Female Fisher	ANTÓNIO	VAM300315AFS1	SP	
39	Female Fisher	ANTÓNIO	VAM300315AFS2	SP	
40	Fish Trader	ANTÓNIO	VAM300315AFS3	MR\OCT	Dried
41	Fish Trader	ANCHINHA	VAM310315ANC1	MR\OCT	Dried
42	Fish Trader	ANCHINHA	VAM310315ANC2	MR	Dried
43	Fisherman	ANCHINHA	VAM310315ANC3	MR\OCT	
44	Fisherman	ANCHINHA	VAM310315ANC4	MR	
45	Fish Trader	ANTÓNIO	VAM310315AFS1	MR	Dried
46	Fisherman	ANTÓNIO	VAM310315AFS2	MR	
47	Fisherman	ANTÓNIO	VAM310315AFS3	MR	
48	Fish Trader	ANTÓNIO	VAM010415AFS1	MR\OCT	Dried
49	Fisherman	ANTÓNIO	VAM010415AFS2	MR	
50	Fish Trader	ANTÓNIO	VAM010415AFS3	MR	Dried
51	Fisherman	ANCHINHA	VAM010415ANC1	MR\OCT	
52	Fish Trader	ANCHINHA	VAM010415ANC2	MR\OCT	Dried
53	Fish Trader	ANCHINHA	VAM010415ANC3	MR\OCT	Dried

54	Fish Trader	ANCHINHA	VAM020415ANC1	MR	Dried
55	Fish Trader	ANTÓNIO	VAM020415AFS1	MR\OCT	Dried
56	Fish Trader	ANCHINHA	VAM030415ANC1	MR\OCT	Dried
57	Fish Trader	ANCHINHA	VAM030415ANC2	MR\OCT	Dried
58	Fisherman	ANCHINHA	VAM030415ANC3	MR\OCT	
59	Fish Trader	ANTÓNIO	VAM030415AFS1	MR\OCT	Dried
60	Fisherman	ANTÓNIO	VAM030415AFS2	MR	
61	Fisherman	ANTÓNIO	VAM030415AFS3	MR	
62	Fish Trader	ANTÓNIO	VAM040415AFS1	MR\OCT	Dried
63	Fish Trader	ANTÓNIO	VAM040415AFS2	MR	Fresh
64	Fisherman	ANTÓNIO	VAM040415AFS3	MR	
65	Fish Trader	ANCHINHA	VAM040415ANC1	MR	Dried
66	Fish Trader	ANCHINHA	VAM040415ANC2	MR\OCT	Dried
67	Fisherman	ANCHINHA	VAM040415ANC3	MR	
68	Fish Trader	ANCHINHA	VAM060415ANC1	MR\OCT	Dried
69	Fish Trader	ANTÓNIO	VAM080415AFS1	MR	Dried
70	Fish Trader	ANCHINHA	VAM080415ANC1	MR\OCT	Dried
71	Fisherman	ANTÓNIO	VAM080415AFS2	MR	
72	Fisherman	ANCHINHA	VAM080415ANC2	MR	
73	Fisherman	ANTÓNIO	VAM080415AFS3	MR	
74	Fisherman	ANCHINHA	VAM080415ANC3	MR	
75	Fish Trader	ANCHINHA	VAM090415ANC1	MR\OCT	Dried
76	Fish Trader	ANCHINHA	VAM090415ANC2	MR\OCT	Dried
77	Fish Trader	ANTÓNIO	VAM090415AFS1	MR	Dried
78	Fish Trader	ANTÓNIO	VAM090415AFS2	MR\OCT	Dried
79	Fish Trader	ANTÓNIO	VAM090415AFS3	MR\OCT	Dried
80	Fish Trader	ANTÓNIO	VAM280315AFS4	MR\OCT	Dried

APPENDIX 2

2.1 A

Legend

SP= Small Pelagics

MR=Small Mixed Reef

OCT= Octopus

Cons= Consumers

Mama K= Mama Karanga/ Women Fish Fryers

Mark= Market

Nodes

Boat and net Fisherman

Boat and hook+ line Fisherman

Boat and spear gun Fisherman

Foot trap fisherman

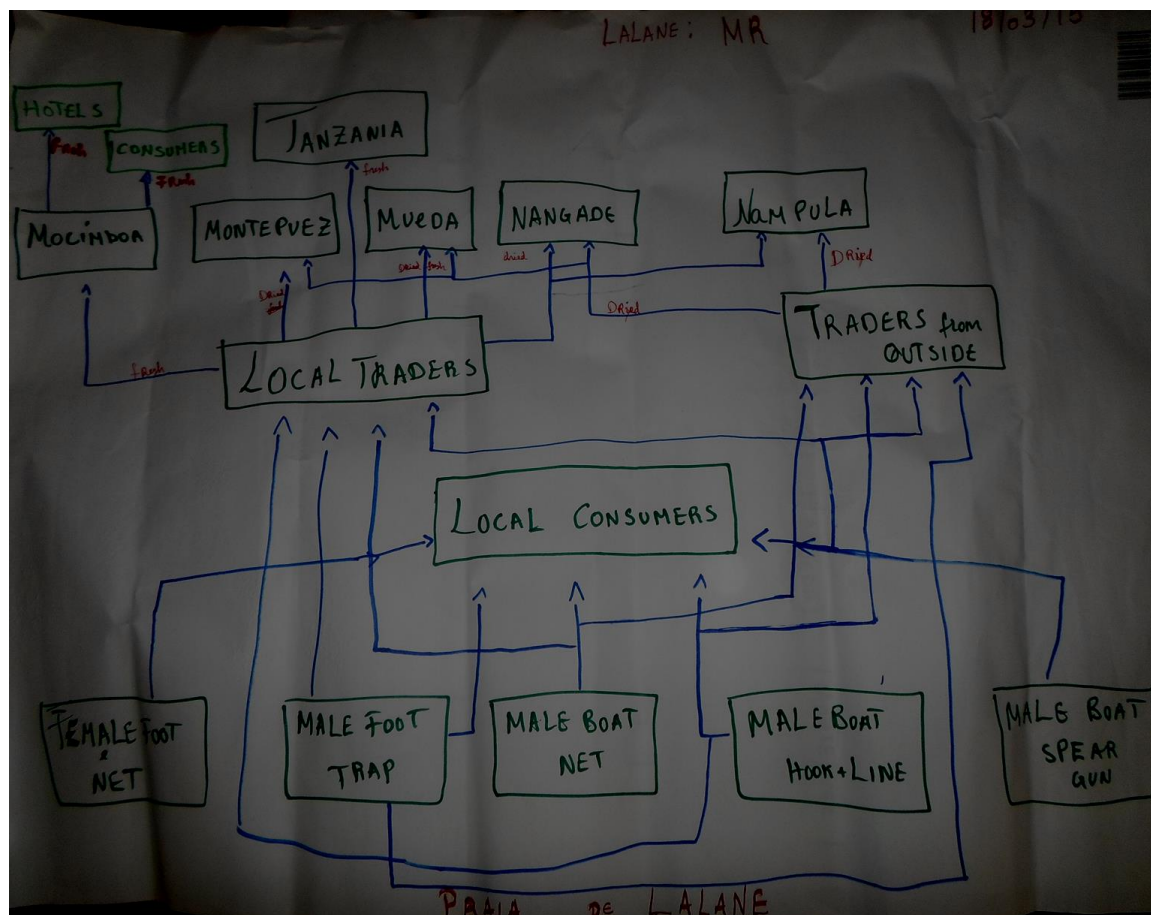
Woman Foot Fisher (mosquito net)

Local Consumers

Local Traders

Traders from outside

Mixed reef fish value chain, Lalane



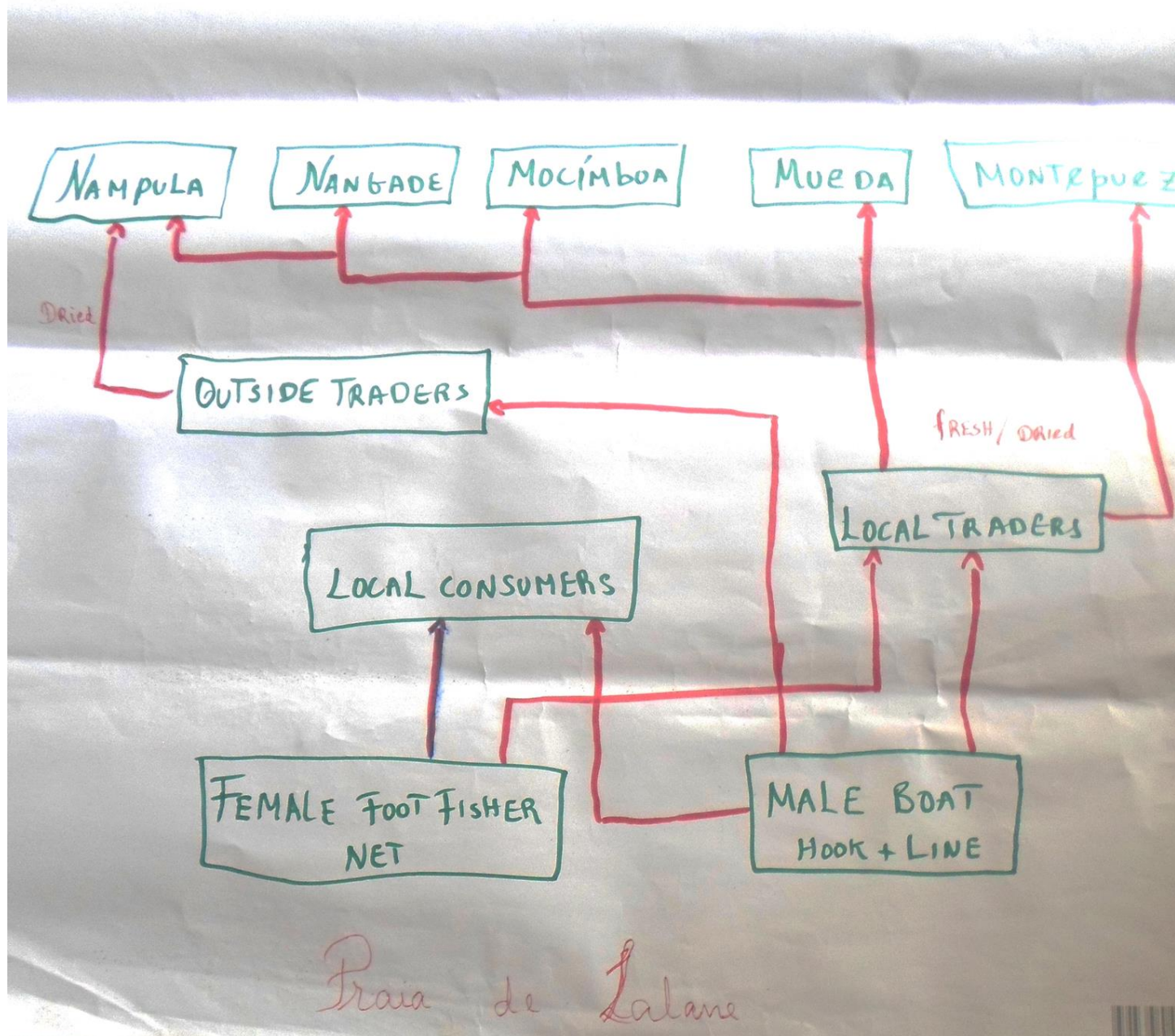
2.1 B

Small Pelagics value chain, Lalane

SV

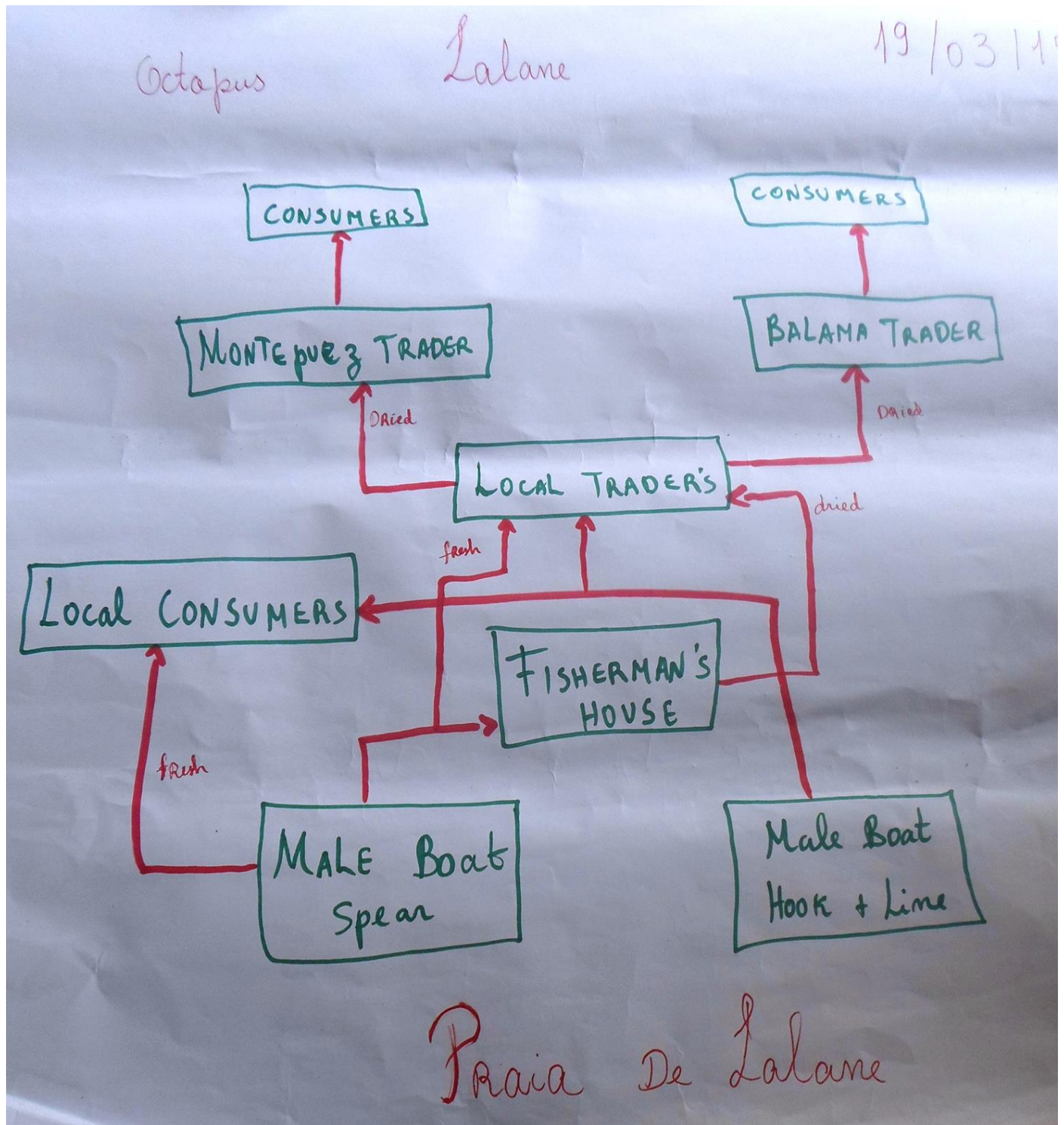
Lalane

19/03/15



2.1 C

Octopus value chain, Lalane



2.2 A

Legend

SP= Small Pelagics

MR=Small Mixed Reef

OCT= Octopus

Cons= Consumers

Mama K= Mama Karanga/ Women Fish Fryers

Rest/Restar= Restaraunts

Mark= Market

Candungueiro/Candun= Trader

Nodes

-Men Foot Fishers

-Women Foot Fishers

-Men Boat Fishers

-Male Traders (Dried Product)

-Male/Female Traders (Fresh Product)

-Mama Karangas

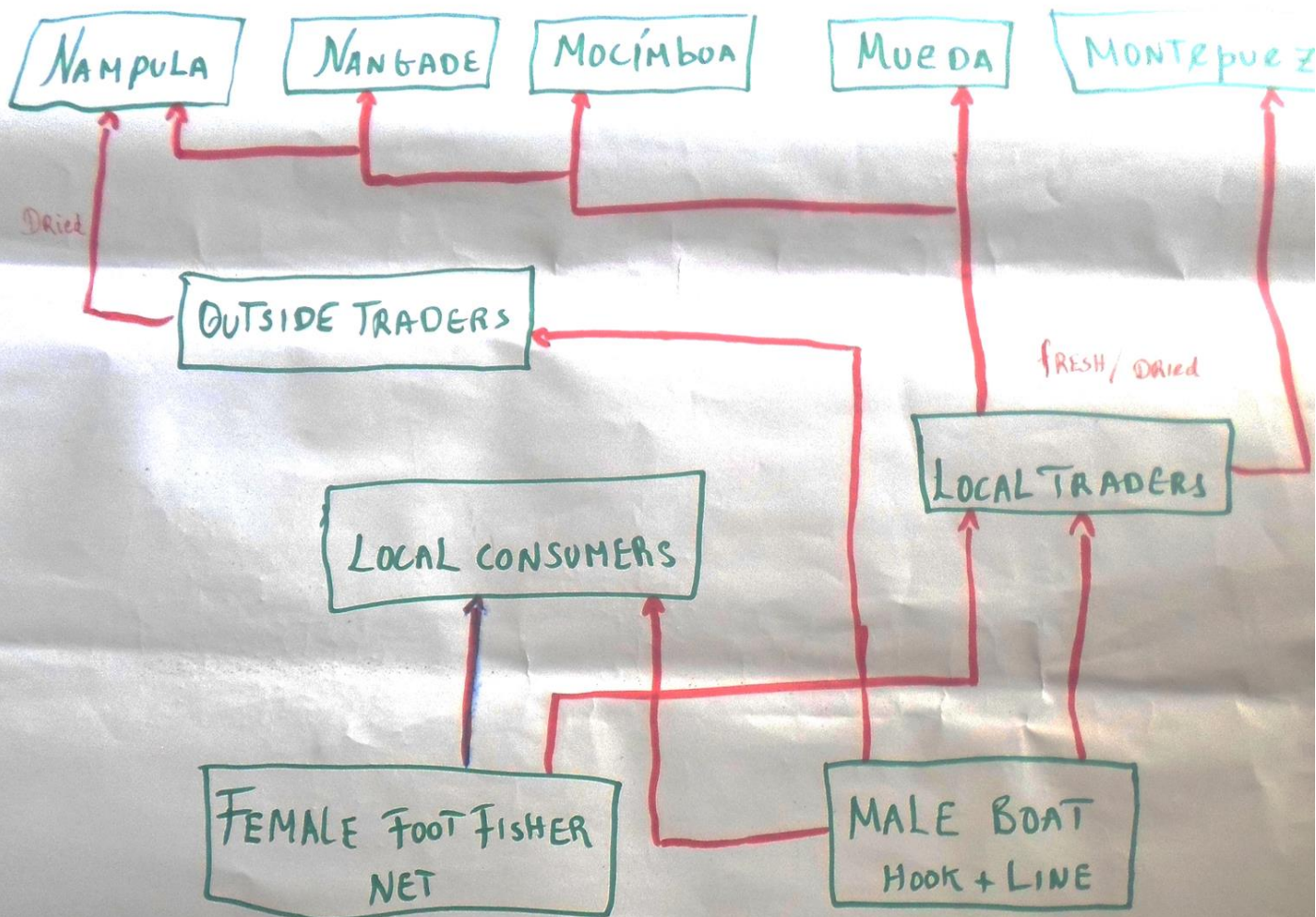
-Local Consumers (Maringanha)

Small palagics value chain, Maringanha

SV

Lalane

19/03/15



Praia de Lalane

2.3 A

Legend

Nodes

SP= Small Pelagics

MR=Small Mixed Reef

OCT= Octopus

Cons= Consumers

Mama K= Mama Karanga/ Women Fish Fryers

Mark= Market

Ruela Boat Local Fisherman

Paquitequete Boat Tanzanian Fisherman

Woman Foot Fisher

Man Divers Foot Fisher

Man Boat fisher

Local Consumers

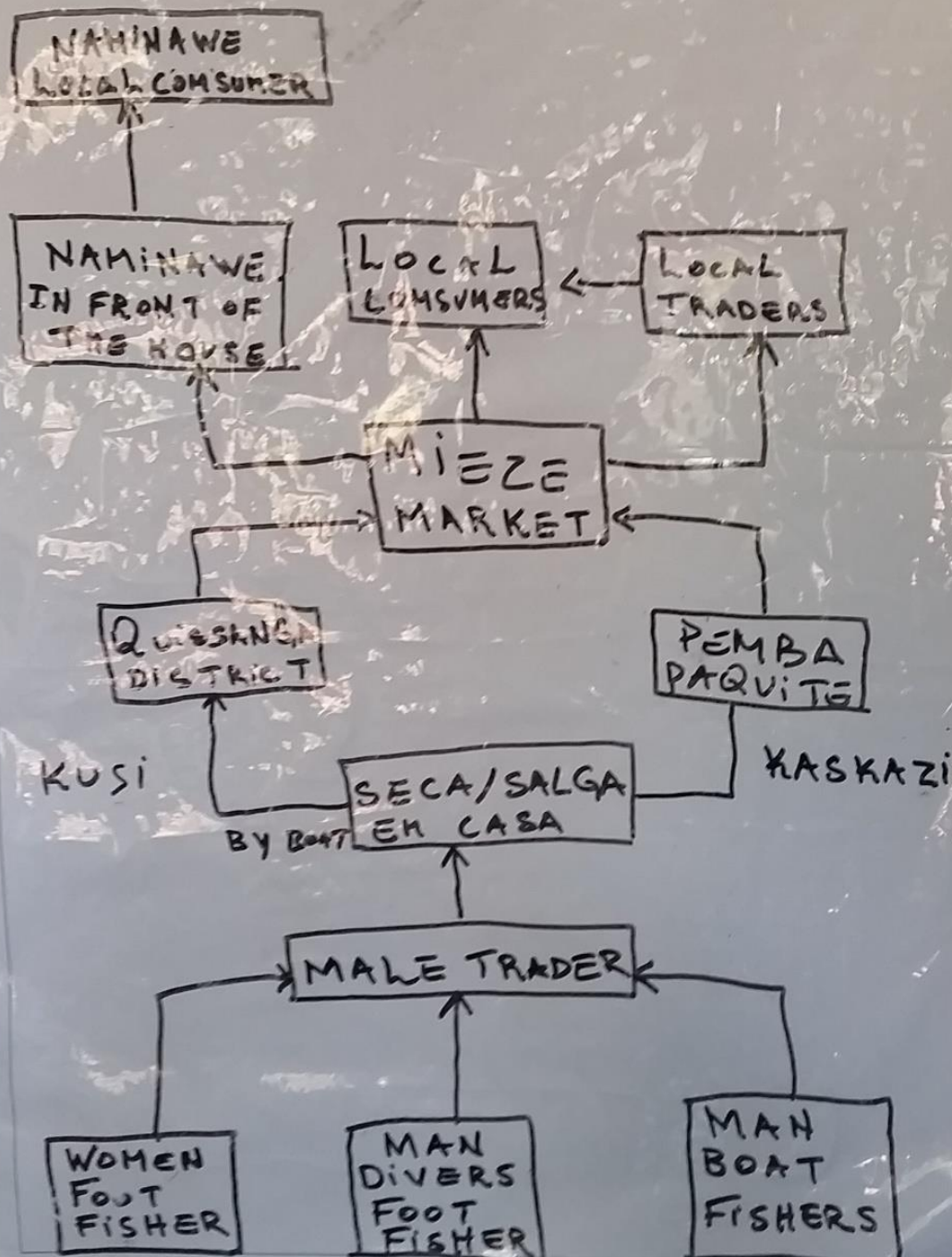
Local Traders

Fisherman

Traders

Octopus and mixed reef fish Value Chain, Mize

OCTOPUS, MIEZE DRIED 21st FEB



Lapizarra de Sadipal ME FUNVU ISLAND

Sadipal
REDAZIONE

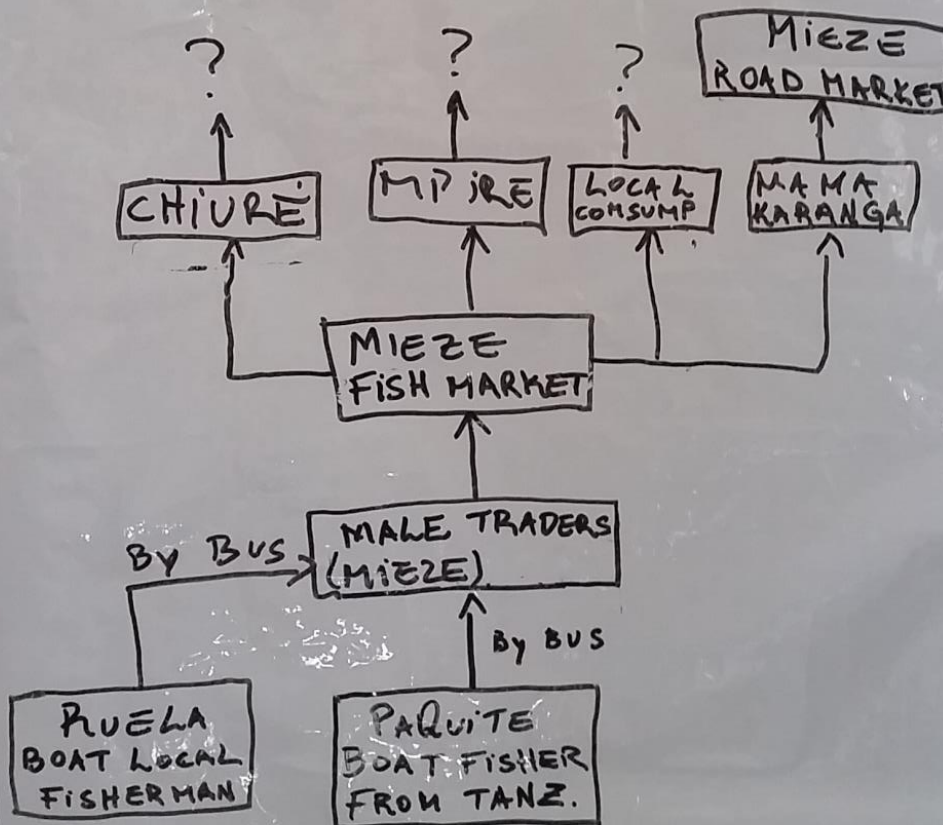
2.3B

Small pelagic value chain, Mize

MIEZE SMALL PELAGIC, 21st FEB
FRESH FISH.

SPP

- NCALALA
- SARDINHA
- SAFI
- CARAPAU



2.4A

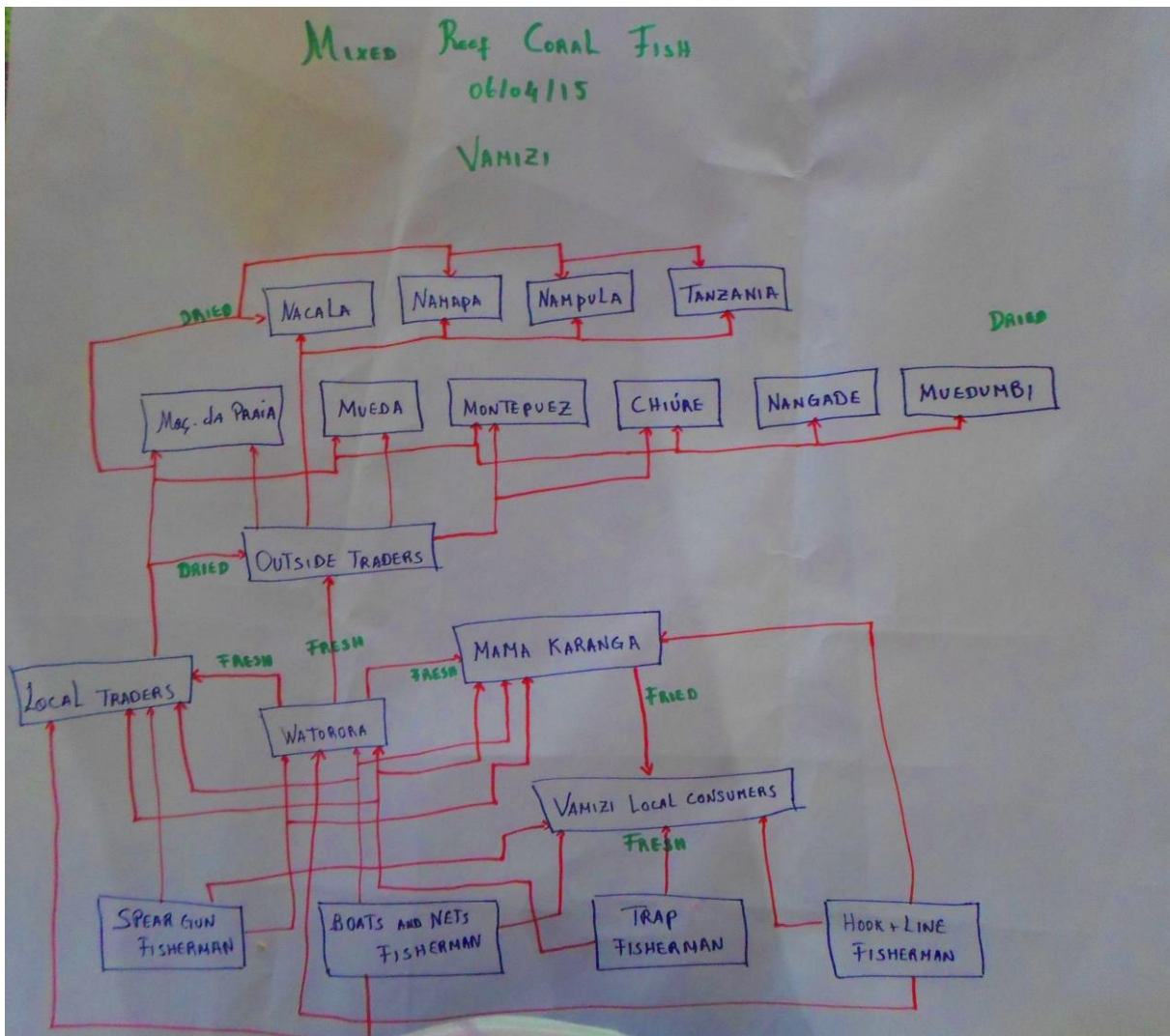
Legend

SP= Small Pelagics
 MR=Small Mixed Reef
 OCT= Octopus
 Cons= Consumers
 Mama K= Mama Karanga/ Women Fish Fryers
 Rest/Restar= Restaraunts
 Mark= Market
 Watorora= middle-man

Nodes

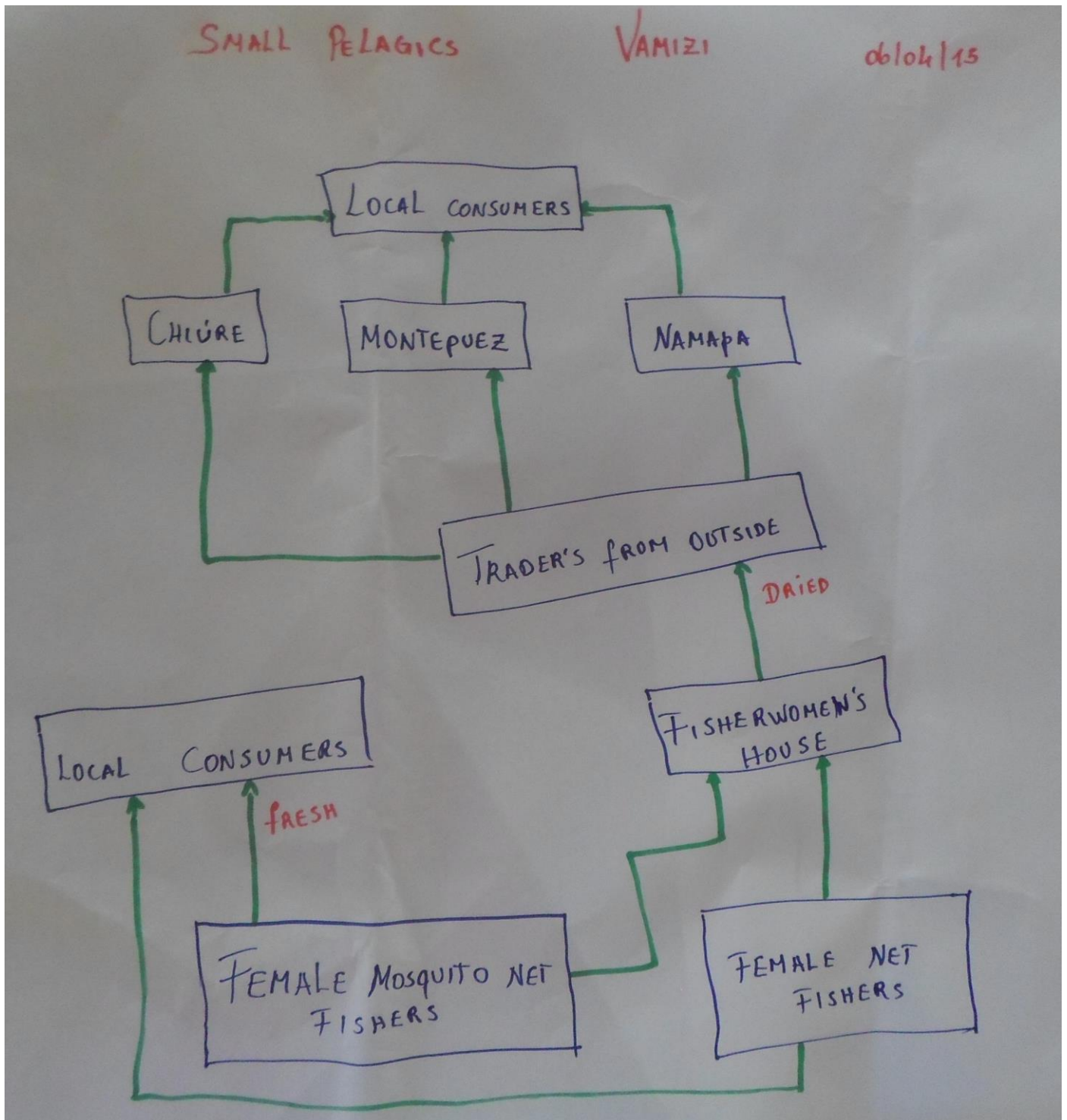
-Women Net Fishers
 -Women Mosquito Net Fishers
 -Men Boat Fishers
 -Local Traders (Dried Product)
 -Outside Traders (Dried Product)
 -Mama Karangas
 -Watorora-
 -Local Consumers (vamizi)

Mixed reef value chain, Vamizi



2.4B

Small Pelagics value chain, Vamizi



2.4C

Octopus value chain, Vamizi

